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THE AMERICAN JOURNAL OF PROCTOLOGY

OFFICIAL PUBLICATION OF THE INTERNATIONAL ACADEMY OF PROCTOLOGY

CONTENTS

Development of Anorectal Fistulae

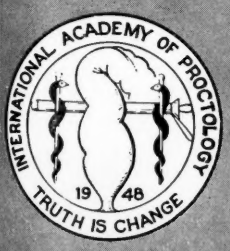
Nutritional Management of Patients with Colon Surgery

Roentgen Therapy for Pruritus Ani

Solitary Diverticulitis of the Cecum

Constipation (Part II)

Editorials ● News Notes ● Abstracts



VOLUME 1 NUMBER 3

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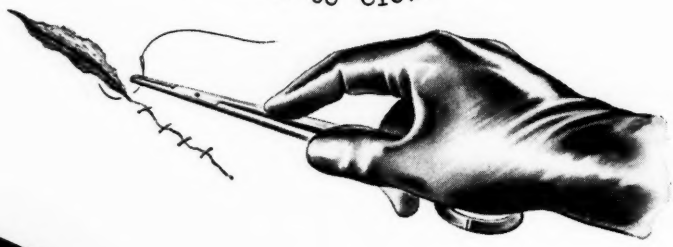

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THE AMERICAN JOURNAL OF

PROCTOLOGY

The First Authoritative Journal of Proctology and Allied Subjects

VOLUME 1 SEPTEMBER, 1950 NUMBER 3

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THE AMERICAN JOURNAL OF

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VOLUME 1 SEPTEMBER, 1950 NUMBER 3

DEVELOPMENT OF ANORECTAL FISTULAE*

EMMA L. BELLOWS, M. D.

Southampton, N. Y.

In order to understand the various types of anorectal fistulae, it is necessary to trace the origin and development of the original abscess and subsequent fistula. With very few exceptions the infection starts in one of the crypts of Morgagni caused by a break in the mucous membrane during straining at defecation with either constipation or diarrhea—or from a foreign body or feces in the crypt. A few of the exceptions are foreign bodies such as fish or chicken bones puncturing the rectal wall; perianal injection of oil soluble anesthetics; improper injection of hemorrhoids; and, injuries such as laceration of the perineum during delivery.

Cryptitis is the usual cause and is a very common complaint. There is burning and itching and the formation of a little pus in the crypt; this pus is usually expelled through the mouth of the crypt into the anal canal. The condition subsides with or without treatment and there is no further trouble until it happens again.

However, sometimes the mouth of the crypt becomes sealed by inflammation; the pus increases in amount and develops pressure. Pus of itself does not burrow. Pus is fluid under pressure and is subject to the laws of hydrostatic pressure—in other words, fluid under pressure follows the path of least resistance. In the rectum there are many paths which it may follow and they are always along the fascial planes. Buie states that pus burrows through the muscle. I do not think this is true. I think it is forced by pressure between the bundles of muscles and this can be seen if we accept Morgan's belief that the external sphincter is composed of three separate muscle bundles.

The location of the abscess and later fistula is dependent upon which crypt is infected and which fascia is weakest. In the accompanying diagrams, I try to show the anatomy and the formation of the various abscesses.

If the pus is not extruded through the mouth of the crypt, it may extend downward under the skin to the edge of the anus. Here it forms a subcutaneous abscess and either breaks or is incised. This forms the simplest fistula—a subcutaneous fistula with

*Read before the Second Annual Convention of the International Academy of Proctology, San Francisco, Calif., June 23, 24, 1950.

the external opening near the margin of the anus. An abscess or fistula of this type is very easy to operate. Incise the abscess, remove the crypt. Back cut both, upward and outward. No muscle is involved.

Salmon who lived in the 1850's, said that any fistula having its external opening located one inch or less from the anal margin will have its internal opening directly on line—wheel-spoke fashion—with the external opening. With one exception, this rule still holds good today. An external opening more than one inch from the verge may also be on a direct line but not necessarily so and usually is not.

When the pus in the submucous area of the crypt goes downward, it may meet resistance near the skin and then be forced upward along the fascial planes of the external sphincter. We believe that the external sphincter is composed of three bundles of muscles—the sphincter ani externus subcutaneous, sphincter ani externus superficialis and sphincter ani externus profundus; and each bundle, of course is covered by fascia.

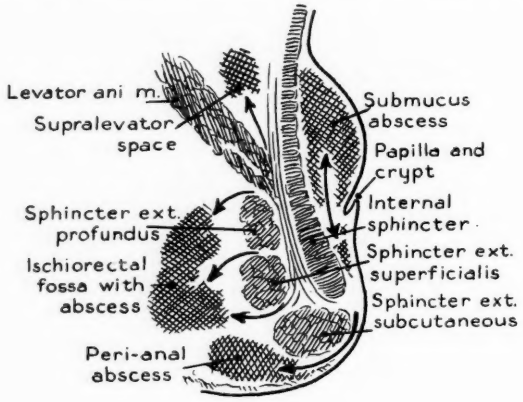

Fig. 1

The pus may enter the perianal space between any of these bundles and form a perianal abscess. It is treated in the same way as the first case except that a bundle or two of muscle is incised. Packs should not be placed between the cut ends of muscle as they are a frequent cause of incontinence. If they are used to control bleeding, they should be removed in twenty-four hours.

The pus may have been forced upward under the mucous membrane instead of downward in which case we have a submucus abscess of the rectal wall. It may be lateral or posterior. Incision and drainage into the rectum is not wise. Remove the crypt and incise upward through the rectal wall covering the abscess and downward and out onto normal skin. Insert a loose wick of gauze.

It is quite common to have a combination of these two. The pus first went downward, met the resistance of the skin and was then forced upward always following the line of least resistance. The treatment is a combination of the two and muscle is incised.

Infection of posterior crypts accounts for most of the extensive fistulae. The pus may enter the ischiorectal space between the externus profundus and external superficialis; or, between the external profundus and levator ani—in either case forming an ischiorectal abscess. It may follow the fascia above the levator ani and form a supralevator abscess. This is a serious abscess and if not drained early, the pus may push upward between the peritoneum and abdominal parietes, rupture into the peritoneal cavity and result in death. I know of one such case. It was demonstrated clearly at autopsy. An ischiorectal abscess may break through the isthmus behind the anococcygeal ligament and form a retrorectal abscess.

The classification of fistulae in most text books emphasizes the location, number and relationship of the external openings. We have complete fistulae, blind internal, blind external, watering pot and horseshoes; but they do not help us locate the internal opening. There is no such thing as a blind external fistula—there is always an internal opening. It may be sealed over temporarily and appear to be a blind end. There are blind internal fistulae—the abscess has ruptured internally but not through the skin.

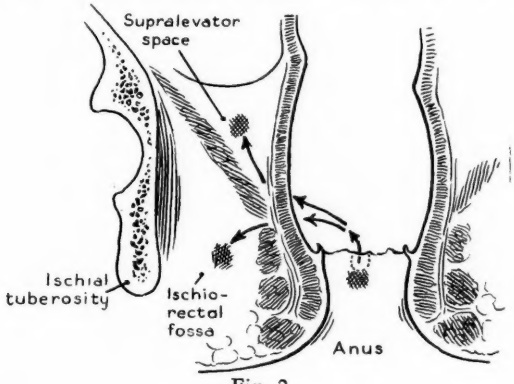

Fig. 2

Except very rarely, all fistulae in one patient have one internal opening—there may be twenty external openings but only one internal. Fistulae at first have only one external opening. This may heal over and the pus is forced into a new channel where it erupts and forms another opening and so on. All of these channels are connected with the original. In operating, all of these channels should be incised or excised up to the original tract near the anal verge. When they are nearly healed—a week or two later—you have left a short fistula which is then incised. In this way, you do not get a retraction of the anus and deforming scars.

The classification of fistulae that I like best is one that I learned from Dr. Frank Stanton of Boston. There are five areas into which we divide the circumference of the anus. A fistula originating in any of these, displays certain characteristics peculiar to itself. The location of the external opening with the direction of the tract as felt by palpation indicates the location of the internal opening. The fistula is named according to the location of the crypt.

Type I:—The external opening appears in the perineum or close to it. It is directly anterior to the anus. The offending crypt and consequently the internal opening is directly anterior in the anal canal. The fistula often extends as far as the scrotum in the male and labia in the female.

Type II:—This occurs either on the left or right anterior area. It originates in a right or left anterior crypt. The external opening is usually in the region of the gluteal fold and is often mistaken for a gluteal abscess. The tract is deep and the deep bundles of the external sphincter are involved.

Type III:—This is directly lateral on a line drawn from one ischeal tuberosity to the other, bisecting the anus. This is known as Salmon's line. The external opening is

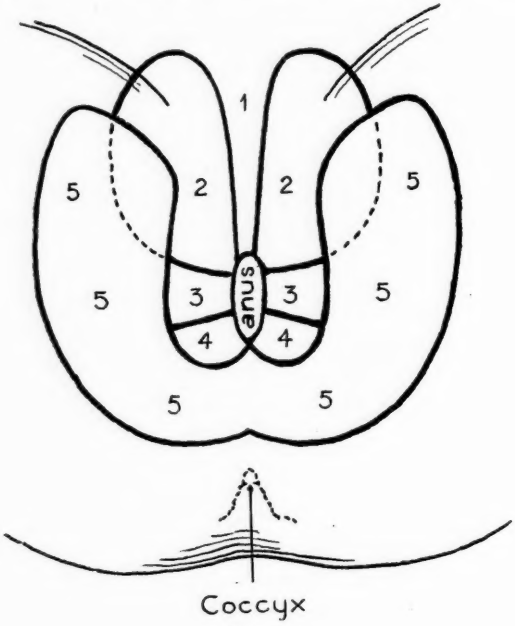

Fig. 3

directly on line, wheel-spoke fashion, with the internal opening. The tract can be palpated. It may or may not involve the anal muscles. Types I and III are seldom complicated and do not invade the ischiorectal fossa.

Type IV:—This originates in a crypt right or left posterior. It is often the most difficult type to treat. The external opening is just beyond the anal margin in the right or left posterior quardant. The internal opening is located high in the anal canal and the external opening is usually not on a line with it radially. This fistula is an exception to Salmon's law which says that a fistula having its external opening within an inch of the anal margin will have its internal opening on a straight line with it.

Type V:—Takes in all fistulae originating in the crypt directly posterior. These are the fistulae which invade the ischiorectal fossa, supralevator space and anococcygeal triangle. They comprise the watering pots and horseshoe types. They are the most complicated ones we deal with. Again we mention another law of Salmon who said that, a fistula having an external opening anterior to Salmon's line and the tract is found to cross that line, will have its internal opening in a posterior crypt. The law still holds good.

Fistulae originating in pilonidal cysts can invade the ischiorectal and supralevator spaces, but are not considered in the above classification.

Summary

Most anorectal fistulae originate in an infected crypt of Morgagni. The infection spreads along the fascial planes. As pus is formed it becomes fluid under pressure and follows the path of least resistance. This may be submucous, subcutaneous, perianal, ischiorectal, supralevator or retrorectal depending upon which crypt is infected and which fascia is weakest.

Fistulae are classified according to the location of the internal opening. The buttocks, perianal region and perineum are arbitrarily divided into five areas to designate the five types of fistulae.

Type I originates in the anterior crypt and the external opening is directly anterior on a straight line.

Type II originates in a right or left anterior crypt and the external opening is in the region of the gluteal fold. The tract is deep but straight.

Type III originates in a lateral crypt and the external opening is on a straight line with the internal. It is a simple fistula.

Type IV originates in a right or left posterior crypt. The tract is deep and tortuous and the internal opening is high in the rectum and it is a difficult fistula to operate.

Type V originates in the posterior crypt and comprises most of the extensive fistulae which wander in many directions and have multiple openings.

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NUTRITIONAL MANAGEMENT OF PATIENTS WITH COLON SURGERY*†

JACOB JOSEPH WEINSTEIN, M.D., F.A.C.S.**
Washington, D. C.

As the leaves of medical journals are reviewed for the past fifteen years, one is impressed with the definite decline in surgical mortality and morbidity in diseases of the colon. Yes, this in the face of an increased magnitude of operative procedures.

These results have not been accomplished merely by one change or by one factor, but rather by a coordinated and integrated plan of improved anesthesia, better surgical technics, the establishment of blood banks and the subsequent frequent use of adequate amounts of blood, the discovery and use of chemotherapeutic and antibiotic agents, a greater understanding and regard for fluid and electrolyte role in the body, and more comprehensive preoperative and postoperative nutritional evaluation and care.

Diseases of the colon are frequently associated with chronically ill patients in whom general nutritional deficiency is seen. One rarely sees a deficiency in one element alone in patients with lesions of the colon. More often, a general deficit of all of the essential substances, such as carbohydrates, proteins, fats, vitamins and minerals is encountered.

The presence of a recent involuntary weight loss is good clinical proof of nutritional deficiency and should prepare the surgeon to be on guard in the preoperative and postoperative care of this surgical patient. The following program is of value in assessing the nutritional status of each patient requiring extensive colon surgery:

1. Medical history and physical examination.

2. Dietary history. How often do patients through neglect, personal habits, or lack of knowledge live on an inadequate diet?

3. Estimation of the weight loss present. This is calculated from the maximum weight of the individual within six months of the present illness, or the usual weight of the patient.

4. Estimation of the degree of anemia, hypoproteinemia, and vitamin deficiencies. Laboratory procedures of hematocrit, complete blood count, total protein, albumin and globulin ratios are necessary. If available, blood and plasma volumes are extremely helpful in determining accurately the reduction of red blood cell mass.

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*Read before the Second Annual Convention of the International Academy of Proctology, San Francisco, Calif., June 23, 24, 1950.

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The plasma protein hydrolysate preparation and the invert sugar used in this study were supplied by the Baxter Laboratories, Incorporated, Morton Grove, Illinois.

Preoperative Preparation

Anemia and hypoproteinemia are often present together with malignancies of the large bowel. Severe degrees are seen with carcinoma of the cecum and ascending colon, diffuse polyposis and in ulcerative colitis. Many reports in the literature list the prevalence of preoperative anemia and hypoproteinemia in surgical candidates. Of 246 admissions to the surgical wards at the Gallinger Municipal Hospital, 23.5 per cent showed hematocrits below 38; 23.1 per cent were found to have less than 6 gm. of total protein per 100 c.c. of serum. In this series, 24 per cent of the cases with carcinoma of the left colon showed signs of hypoproteinemia and 38 per cent anemia. Ariel and his associates describe preoperative hypoproteinemia in 36 per cent of the patients with carcinoma of the colon.

The association of anemia and hypoproteinemia is a complex situation requiring a high degree of detection and optimal correction. Whipple, through many detailed studies, found that hemoglobin formation does have a preferential demand on ingested or injected proteins. Though hemoglobin is formed more readily than albumin regardless of the diet, the rate and degree of production of hemoglobin is directly dependent upon the state of the protein stores. Tissue proteins are in a state of dynamic equilibrium with the blood proteins. In the chronically ill patient, therefore, a low hemoglobin and a significant hypoproteinemia indicate tissue protein deficits. These facts lead one to the conclusion that if protein supplies are limited, hematopoiesis will draw upon the tissues and the ingested and injected proteins.

A planned preoperative nutritional program is necessary to supply enough blood to correct the anemia and hypoproteinemia, and offer an adequate quantity of proteins, vitamins, carbohydrates, and calories, either by oral or parenteral routes, to maintain daily nutritional equilibrium, and an excess of these nutrients to restore depleted tissues.

Patients should not be permitted to go to elective colon surgery without correction of any existing anemia and hypoproteinemia. Our program requires a hematocrit of 42 and a total protein of 7 to 7.5 gm. per 100 c.c. of plasma. The quantity of blood needed to correct the anemia is determined from the hematocrit level of the patient. One hundred c.c. of blood are given for each point of hematocrit below the desired level of 42. In most cases the hematocrit values are good clinical criteria for the degree of anemia. But, in the more chronically ill patient, whose blood volume is contracted because of anemia and hypoproteinemia, the true estimate of red cell mass deficit is best calculated from blood volume values and by comparison of these figures with the estimated values for the patient at the time of his ideal weight. Chronically ill patients will better tolerate operative intervention in colonic diseases if the red cell mass is restored to optimal levels by repeated transfusions. If this point is remembered, the old will tolerate surgery as well as the young.

Along with the administration of blood, a planned feeding program is instituted in order to reduce the general nutritional deficiencies and increase the body stores. It is not sufficient to leave a routine order for a "high protein, high carbohydrate, high caloric, high vitamin diet". Experience has shown us that patients usually do not bene-

fit from such orders because (1) the diet ordered is not served the patient, (2) the food is only partly eaten, (3) a portion of the food ingested is subsequently lost through vomiting, diarrhea, or by inadequate digestion and utilization.

If the patient is to benefit from a planned feeding program, the surgeon must accurately determine and record the total intake and make allowances for losses by unusual paths. The planned diet should be palatable, readily digestible, and consist of 2,500 to 3,000 calories, of which 150 grams are protein. Since fats are not tolerated too well by chronically ill pateints, the total fat intake should comprise only from 15 to 20 per cent of the total calories. When the pateint cannot or does not consume the entire required diet, supplemental feedings with protein digests, skimmed milk, egg nogs, cottage cheese, and special supplementary feeding formulas are necessary. The intake is more accurately and easily determined when feeding formulas are employed.

If oral or tube feeding is inadequate, then we must rely partially or totally on parenteral feeding for the maintenance of positive nutritional balance. Repeated nitrogen balance studies at the Gallinger Municipal Hospital in varied preoperative and postoperative cases have shown that positive nitrogen balance can be maintained in patients on a total parenteral alimentary program.

The amount of protein required to replace the tissue deficiency may be calculated by two methods: one from the degree of hypoalbuminemia, and the other from the weight loss. Elman has described a 30 to 1 relationship between tissue depletion and albumin deficit, i.e., for every 1 gram of albumin lost, there is a 30 gram tissue protein deficit. Using this knowledge, the grams of protein needed to restore the deficit present may be determined by the following formula:

1. gm. Albumin deficit per 100 c.c. serum ×
2. 35 (plasma=5 per cent of body weight: average 70 kg. individual) ×
3. 30 (estimated depletion of tissue protein for each 1.0 gm. plasma albumin deficit) =
4. TOTAL ESTIMATED PROTEIN DEPLETION
5. Daily nitrogen loss of 31 gm. Protein (5 gm. nitrogen) ×
6. Number of days for restoration of nitrogen balance =
7. LOSS OF DAILY NITROGEN PER NUMBER OF DAYS or, the amount of protein necessary to compensate for daily tissue protein loss
8. Total amount of protein to be fed to compensate for protein depletion

PLUS

Daily loss of protein = 4 PLUS 7

9. Total derived in 8 ÷
10. Number of days =
11. GRAMS OF PROTEIN TO BE ADMINISTERED DAILY FOR NUMBER OF DAYS TO MAINTAIN NITROGEN EQUILIBRIUM

The grams protein needed may be calculated from the weight loss, for each pound of body weight represents 15 gm. of nitrogen, or about 90 gm. of protein. This may be calculated in the following way:

1. Pounds body weight deficit ×
2. 454 (gm. per lb.) ÷
3. 5 (muscle protein 80 per cent water) =
4. GRAMS PROTEIN DEFICIT ÷
5. 6.25 =
6. GRAMS NITROGEN DEFICIT

For surgical operations of the colon, where the intake of the patient is all parenteral, the following total parenteral program has proved capable of keeping a patient in positive nitrogen balance, good fluid balance, and preventing serious decreases in hematocrit, total protein levels, and weight. The schedule is as follows:

1. 8 a.m. 1,000 c.c. plasma protein hydrolysate and 5 per cent dextrose
   To be administered intravenously in 1½ hours
2. 2 p.m. Same as 1. Intravenously or intramuscularly.
3. 8 p.m. Same as 1.
4. Water soluble vitamins to be added to one of the intravenous infusions.

The actual amounts of nutrients received according to this plan may be listed:

Water	3,000 c.c.
Salt	6-7 gm.
Proteins as amino acids	150 gm.
Glucose	150 gm.
Total Calories	1,200

Fluid balance will be maintained on the above amount of water. The average uriniary output is approximately 1,000 c.c. per day with the excretion of about 6 to 7 gm. of salt. The salt given is replacement of the average daily loss and the proteins supply approximately 2 gm. per kilogram of body weight in a 150 lb. subject. Calories supplied are sufficient for basal caloric needs. If greater caloric intake is desired, an additional 50 gm. of glucose may be added to each bottle of plasma protein hydrolysate before the infusions. Thus, another 600 calories is supplied.

The infusion of solutions containing the additional quantity of glucose must be given intravenously, and at a rate commensurate with glucose tolerance (0.75 gm. per kg. per hour). Slower infusion rates are therefore necessitated by the more concentrated glucose solutions,—a definite handicap. In an effort to shorten the periods required by parenteral alimentation as much as possible, the author has searched for other carbohydrate solutions. Recent studies with invert sugar reveal that it may be given twice as rapidly as glucose with a greater degree of retention. It is possible to administer 100 gm. of invert sugar to an average adult in 56 minutes, achieving a 98.4 per cent retention. The use of invert sugar to replace glucose with plasma protein hydrolysate will permit faster infusions and greater total caloric intake. Caloric values approaching restitution levels may be achieved without long tiring periods of infusions and inconveniences to the patient.

Large doses of vitamins are also required by subjects for colon surgery. An acute multivitaminosis appears during the three to five day period of starvation and the sulfone and antibiotic therapy before surgery. This acute depletion exaggerates the existing deficiency. Patients on parenteral alimentation will require large doses of vitamins, to be given by the intravenous or intramuscular routes. The recommended daily doses are as follows: 500-1,000 mg. Vitamin C, 20-40 mg. thiamin, 5-20 mg. riboflavin, 100-200 mg. nicotinic acid. The use of oral sulfones (sulfathalidine) and streptomycin cause inhibition of the bacteria in the gastrointestinal tract which synthesize Vitamin K.

In order to prevent a prothrombin deficiency and its sequelae during surgery, supplementary amounts of Vitamin K are to be prescribed.

Days, not hours, are necessary to restore tissue protein depletion.

Operative Care and Nutrition

Colon surgery is associated with blood loss and trauma. The blood lost during operative procedures is of much greater magnitude than estimated by the surgeon. If blood loss is not ideally replaced at the time of loss, the reduced blood volume sets up the physiologic mechanisms for shock. A 25 to 40 per cent reduction in blood volume will produce clinical secondary shock. The old proverb "an ounce of prevention is worth a pound of cure" can be applied with perfection to the replacement of blood simultaneously with its loss during operations. Shock is averted by blood replacement and the postoperative course is improved. Blood is also an excellent source of protein nutrition for the patient who undergoes an acute starvation period after large bowel resection. The amount of blood given depends on the individual's needs during and immediately following surgery. We routinely give 1,000 c.c. of blood for each colon resection. Rarely is more needed to prevent shock. If blood is not available, plasma is the best substitute. Fluids should be given during the course of the operative procedure in sufficient amounts to meet the immediate losses. The ideal fluid during this period is 5 per cent dextrose in water in 1,000 c.c. volume.

Postoperative Management

Immediately following a combined abdominoperineal resection, the patient is in negative nitrogen, caloric and fluid balance. This period of acute nutritional lack extends for three, four, five or even more days if the patient is wholly reliant upon the oral path. Few patients after an extensive intestinal resection can or will ingest enough on their own to keep themselves in favorable nutritional condition.

The causes for the postoperative nutritional imbalance are the following:

1. *Inadequate intake*:—Rarely before the fourth or fifth day can the patient eat adequate amounts of whole food. Because the sick have poor appetites, and the food offered not too palatable, they will not consume the food presented unless forced.

2. *Increased nitrogen loss in the urine*:—There are two theories to explain this phenomenon. The more common hypothesis supposes that negative nitrogen balance exists after trauma, because of the tissue reaction to surgery. This nitrogen loss is called "toxic destruction of protein", or "catabolic" or "alarm" response due to activation of the adrenal cortex. "Antianabolism" explains the excess nitrogen in the urine after injury by the wastage and excretion of food and protein. The other hypothesis for the presence of negative nitrogen balance after trauma is based on an inadequate caloric and protein intake. Werner reports that postoperative nitrogen losses are readily sustained for several weeks, and occur abruptly when calories or proteins are reduced.

3. *Losses by abnormal routes*:—The posterior wound of a classical Miles resection can produce a serious loss of protein through exudates. This is exaggerated if infection develops.

4. *Inadequate digestion and absorption*:—The edema of acute or subacute hypoproteinemia and the diminished production of the enzymes prevent or inhibit normal digestion and absorption of whole foods.

5. *Inadequate utilization and function*:—Impaired liver function from metastasis, hypoproteinemia, or the fatty infiltration of chronic malnutrition, prevents adequate utilization of proteins and carbohydrates, and of course, a normal formation of albumin.

An acute protein defiiciency after surgery due to inadequate blood replacement before and during the operation, plus a subacute decrease from one, all or a combination of the aforedescribed etiologic factors for protein deficiency, affects the entire postoperative course. The clinical manifestations of hypoproteinemia, tissue protein, carbohydrate and vitamin deficiency may be listed under two groups: (a) those showing an increased impaired function, and (b) those with a decreased impaired function. The increased impaired function is evident in the gastric emptying time, edema, wound infection, incidence of dehiscence, susceptibility to shock, susceptibility to toxic agents and injury to the liver, infection, relative increase in weight, interstitial volume, fatigue, lassitude, and muscular weakness. The decrease impaired function is manifest in intestinal motility, wound healing, formation of antibodies, liver function, enzyme formation, bile excretion, utilization and absorption of parenteral fluids such as salt, urinary excretion, blood and tissue proteins, absorption and utilization of ingested proteins and normal production of albumin.

Postoperative hypoproteinemia after colon surgery is reported: 25 per cent plasma protein reduction by Meyer and Kozol, 86 per cent hypoproteinemia of patients with carcinoma of the colon and rectum after surgery by Ariel, a 13 per cent decrease in total proteins and a 27 per cent decrease in hematocrit from preoperative levels by the author. Further proof for the acute postoperative deficiency is noted in the weight loss of patients following surgery; an average of 6.5 pounds lost in 9 days after uncomplicated inguinal herniorrhaphy. Without a planned postoperative program of nutrition and care, of 9 patients undergoing radical resection of carcinoma of the rectum and rectosigmoid, there was an average weight loss of 18 lbs. In one of these patients, the weight loss reached 32 lbs.

The philosophy of the postoperative care of any surgical procedure should be the restoration to as near normal physiologic, chemical, and nutritional states as early as possible by all methods at hand. In our experience, prophylactic care by parenteral therapy prevents complications and difficulties. Even though a high intake of parenteral nitrogen as hydrolysates, plasma, or blood produces a high output of nitrogen, not all of the protein given is lost, because some patients show very definite clinical improvement. Controversy exists on the value of immediate postoperative parenteral feeding with blood and protein hydrolysate. Oral foods and proteins are better utilized than parenteral, and larger quantities as well as greater numbers of calories can be administered. We feel that it is part of the thought that, "surgery has been made safe for the

patient, we must now make the patient safe for surgery" to supply blood, plasma, protein hydrolysate, carbohydrates and vitamins by parenteral routes until the patient himself can fulfill caloric and nutritional requirements by oral feedings.

Our postoperative program is as follows:

1. *Total parenteral alimentation* with plasma protein hydrolysate and glucose until active persistalsis returns and signs of ileus disappear.

2. *Hematocrit determinations* every third day with whole blood replacement for deficit present. The hematocrit should be sustained about 38 to 40.

3. *Supplemental parenteral therapy* when oral feeding is below optimal levels to maintain daily requirements and restore any tissue depletion.

4. *Vitamins parenterally* until they can be taken orally.

5. *Soft diet after the third or fourth postoperative day.* A supplementary feeding formula of skimmed milk, powdered whole milk, eggs and sugar is fed. One quart of this includes about 80 gm. protein and supplies 1,300 calories. Many of the commercial protein preparations available are rather unpleasant to the taste and smell, and frequent changes in formulas and flavoring agents must be made for successful ingestion by the patient. Ground beef, cottage cheese, and other high protein foods are fed easily in this postoperative period as part of the soft diet.

6. *Frequent feedings of small amounts* are superior to three large meals per day.

7. *Patients weighed each day* if possible, or every second day. The value of this procedure in the maintenance of fluid balance has been emphasized by Wangensteen. It also helps to determine the effectiveness of the dietary program.

The plasma protein hydrolysate solution used in this study is 5 per cent protein hydrolysate and 5 per cent dextrose in distilled water. Bovine blood is the source of the protein. Each manufactured batch is subjected to control procedures to show that the product is sterile, nonpyrogenic, free of vasomotor substances, free of unhydrolyzed proteins, and that it may serve as an adequate source of parenteral nitrogen. The final product contains 50 gm. of protein, or 0.275 gm. of alpha amino nitrogen per 100 c.c., representing about 50 per cent of the total nitrogen, approximately 0.25 gm. sodium chloride, and a pH of 6.20 to 6.40. Rapid infusions of the solutions are readily tolerated with a low incidence of reactions. In 2,003 consecutive intravenous infusions of 1,000 c.c. of protein hydrolysate in 320 preoperative and postoperative surgical patients, there were 0.72 per cent reactions. Of these, 0.14 per cent were systemic, 0.49 per cent pyrogenic, and 0.69 per cent allergic. The solution may be given intravenously, subcutaneously, or intramuscularly. One thousand c.c. may be given intramuscularly in 34 minutes at a rate of 33 c.c. per minute, with practically complete absorption of the solution within 3 hours from the site of injection, the vastus lateralis muscle of the thigh.

Each case is individualized in the planning of a postoperative nutritional program of patients with colon surgery. A general guide for this type of program is presented in Table I.

TABLE I

GENERAL GUIDE FOR THE PLANNING OF A POSTOPERATIVE NUTRITIONAL PROGRAM FOR PATIENTS WITH COLON SURGERY

Day	Alimentation	Gm. Protein	Gm. Carbohydrate	Total Calories (including calories from gm. fat)
	1,000 c.c. whole blood—replacement			
	1,000 c.c. 5% plasma protein hydrolysate with 5% dextrose—intravenous	50	50	400
	Water soluble vitamins			
	1,000 c.c. 5% plasma protein hydrolysate with 5% dextrose, if necessary	50	50	400
	Total	100	100	800
1 P.O.	8 a.m. 1,000 c.c. plasma protein hydrolysate with 5% dextrose—intravenous	50	50	400
	2 p.m. Same	50	50	400
	8 p.m. Same	50	50	400
	Water soluble vitamins			
	Clear liquids as tolerated	4	78	336
	Total	154	228	1,536
2 P.O.	8 a.m. 1,000 c.c. 5% plasma protein hydrolysate with 5% dextrose—intravenous	50	50	400
	8 p.m. Same	50	50	400
	Clear liquids as tolerated	22	178	872
	500 c.c. Blood			
	Water soluble vitamins			
	Total	157	278	1,672
3 P.O.	8 a.m. 1,000 c.c. 5% plasma protein hydrolysate with 5% dextrose—intravenous	50	50	400
	8 p.m. Same	50	50	400
	1 Qt. Milk formula (4 raw eggs, 8 T. skimmed milk, 4 oz. Karo syrup or glucose, 1 qt. skimmed milk)	74	187	1,337
	Soft diet	31	69	591
	Total	205	356	2,728
4 P.O.	1,000 c.c. 5% plasma protein hydrolysate with 5% dextrose	50	50	400
	Oral vitamins			
	1 quart Milk formula	74	187	1,337
	Full low residue diet	55	117	1,022
	Total	179	354	2,759
5 P.O.	1 quart Milk formula	74	187	1,337
	Diet—high protein, high carbohydrate, low fat content	100	250	1,625
	Total	174	437	2,962
6,7,8,9 P.O.	High protein, high carbohydrate, low fat diet as tolerated ot meet with 2,500 to 3,000 calories per day.			

Examples of the results obtained by following such a postoperative plan are shown in 3 case abstracts:

Case 1:—K. McK., age 67, female. Admitted to the hospital with a history of increasing abdominal distention for the past four days. Obstipation was present for three days, and vomiting of fecal-like material for twenty-four hours. Admission examination revealed 4+ abdominal distention, increased small intestinal pattern, and an empty rectum. Barium enema studies showed complete obstruction at the hepatic flexure of the colon and diverticulosis of the descending colon. There was no history of weight loss. Admission weight was 167 pounds.

A preoperative diagnosis of carcinoma of the hepatic flexure with partial intussusception was made.

The patient was prepared for surgery with a Cantor tube, sulfathalidine, streptomycin, parenteral plasma protein hydrolysate, and whole blood. Blood studies on the second day after admission showed a nonprotein content of 25 mg., a total protein of 7.2 gm., 3.6 gm. albumin, 3.6 gm. globulin, and the albumin-globulin ratio of 1. The red blood cell count was 4,260,000; the white blood cell count 10,800 with a normal differential; and a hemoglobin content of 12.5 gm. per 100 c.c.

Two thousand cubic centimeters of 5 per cent plasma protein hydrolysate with 5 per cent dextrose were given daily intravenously for the seven day preoperative period. The patient was also fed 1,000 c.c. of milk formula for the first five days. This formula consisted of 1,000 c.c. of skimmed milk, 4 tablespoonfuls of Essenamine, and 4 tablespoonfuls of skimmed milk powder. Thereafter, the patient only received clear liquids by mouth. Five hundred cubic centimeters of whole blood were also administered twice during this period.

The weight of the patient on the day before surgery was 165 pounds. The total protein was 6.8 gm., albumin 4.0 gm., globulin 2.8 gm., and blood chlorides 555 mg., or 96 milli-equivalents per liter.

At operation, a carcinoma of the hepatic flexure of the colon was found. Forty centimeters of ileum and 30 cm. of ascending and transverse colon were removed. A side-to-end anastomosis of the ileum and transverse colon was performed by a closed method with Stone clamps. The tumor was described as an adenocarcinoma of the annular type, 6 cm. wide and 13 cm. from the ileocecal valve. One lymph node from the proximal group showed metastasis. There were 27 mesocolic lymph nodes.

The blood pressure was maintained throughout the surgical procedure at 140/60. The pulse rate varied little from 80 beats per minute. One thousand cubic centimeters of whole blood were transfused during surgery. In the course of the operative day, 1,000 c.c. of plasma protein hydrolysate with 5 per cent dextrose were given. For the following three days, 3,000 c.c. of plasma protein hydrolysate with 5 per cent dextrose were injected, 1,000 c.c. by intravenous infusions at 8 a.m., 2 p.m., and 8 p.m. On the fourth postsurgical day, clear liquids as well as 3,000 c.c. of protein hydrolysate with dextrose were administered. On the fifth postoperative day, the patient was given the milk formula supplemented by soft diet including ground beef and cottage cheese. A

full low residue diet containing 150 gm. of protein and supplying 2,600 calories was ordered on the seventh day. The milk formula was furnished throughout the postoperative stay of fourteen days.

The entire postsurgical course was uneventful. During the first two postoperative days the temperature of the patient rose to 100 degrees C., but returned to normal thereafter. The patient was discharged on the fourteenth postsurgical day, weighing 161 pounds. This represented a loss of only 4 pounds during the entire postoperative period. Blood studies before discharge showed the following: hematocrit of 41, hemoglobin of 12 gm., red blood cell count of 4,250,000, total protein 6.8, albumin 3.8, and globulin 3.0. Parenteral vitamins were given before and after surgery until oral food was tolerated; thereafter, concentrated vitamin pills were prescribed.

This patient has been followed for two years. A recent examination was entirely negative.

Case 2:—G.S., age 46, female. Admitted to the hospital with a diagnosis of carcinoma of the sigmoid. A previous history of ruptured diverticulitis of the sigmoid with peritonitis and abscess formation. This latter was drained surgically. Sigmoidoscopic examination was negative; barium enema studies described a narrowing of the sigmoid above the rectosigmoid junction. Admission blood studies indicated a hematocrit of 35, hemoglobin of 11.8, and a white blood cell count of 5,450 with a normal differential. Preoperative weight was 140 pounds.

The patient was prepared for surgery for four days with sulfathalidine, streptomycin, a Cantor tube, and 1,000 c.c. of whole blood.

On the day of surgery, the patient received 2,000 c.c. of 5 per cent glucose in water in addition to 1,000 c.c. whole blood and 500 c.c. of 5 per cent glucose in water infused during the operation. At operation a carcinoma of the sigmoid was found and was removed. The colon specimen measured 12 cm., the tumor measured 3.5 cm. and was described as a firm annular superficially ulcerating reddish gray adenocarcinoma, grade 2. The mesocolic lymph nodes were normal, but the lymphatics adjacent the tumor contained cell clumps. An end-to-end open anastomosis was performed, and a long rectal tube was placed through this anastomosis.

Presurgical blood pressure readings were 140/80; postsurgical 120/60, with pulse rate variations between 80 and 100. On the second, third, fourth, and fifth postoperative days, 3,000 c.c. of plasma protein hydrolysate with 5 per cent dextrose were given intravenously. Clear liquids were given orally on the fourth day, and the milk formula similar to that described in Case 1 with the substitution of Melactin for Essenamine, was added on the fifth postoperative day. A full low residue diet supplemented by the milk formula was the regime for the sixth postsurgical day.

The patient was discharged on the twelfth postoperative day weighting 134 pounds. The total weight lost was 6 pounds from the day of admission to the hospital. The postoperative course was uneventful, and a four month follow-up examination negative.

Case 3:—L.C., age 46, female. History of four month's duration of change in bowel habit, diarrhea, melena, scanty bowel movements, rectal urgency, gross blood,

decrease in stool size, no loss of weight, but enlargement of the abdomen. Physical examination was negative except for a doughiness of the abdomen. Sigmoidoscopic examination revealed a fungating carcinoma, grade 2, 16 cm. from the anorectal line.

The patient was prepared for surgery with sulfathalidine, streptomycin, milk formula, and Cantor tube for four days. Preoperative weight was 134 pounds; total protein 6.4 gm.; albumin 4.5; globulin 1.9; and red blood cell count 4,020,000.

At operation the carcinoma situated just above the rectosigmoid was removed. Fifteen centimeters of colon were resected and an end-to-end anastomosis executed. During surgery, the patient received 1,000 c.c. whole blood. Two thousand cubic centimeters of plasma protein hydrolysate with 5 per cent dextrose were infused later that day. On the first, second, and third postsurgical days, the patient received 3,000 c.c. plasma protein hydrolysate with 5 per cent dextrose daily by the intravenous route along with parenteral vitamins. Clear liquids were added on the fourth day, and soft diet and milk formula on the fifth. During these two days, she also received 2,000 c.c. plasma protein hydrolysate daily. Thereafter full, low residue diet containing 150 gm. of protein, 1 quart of milk formula, and oral vitamins were prescribed each day, until discharge of patient from hospital—the eleventh postsurgical day.

Blood studies on the tenth postoperative day revealed a total protein content of 7.0, albumin 4.5, globulin 2.5, and red blood cell count of 3,690,000, a decrease of 330 red blood cells from the preoperative level, The discharge weight of the patient was the same as the presurgical, 134 pounds.

The patient made an uncomplicated postoperative course. A two year follow-up examination and sigmoidoscopy were entirely negative. The present weight of the patient is 128 pounds.

Summary

Successful colon surgery depends upon a blend of many factors, among which is the careful supervision of patients before, during and after operation. The nutritional, fluid and electrolyte needs of patients undergoing colonic surgery are indeed, part of this supervisory care. Diseases of the colon are frequently found in the chronically ill. Anemia, hypoproteinemia and general nutritional inadequacies are present in a large per cent of the patients requiring colon surgery. A planned preoperative nutritional program which makes each case a good risk is described in detail. It consists of (1) the importance of evaluation of the existing nutritional conditions, (2) formulas for the calculations of blood and protein deficits, (3) the procedure for replacement therapy with blood for anemia and hypoproteinemia, and (4) oral and parenteral feeding schedules for the replacement of tissue deficits and the building of body tissues and stores. A discussion follows of the etiology and clinical manifestations of postoperative nutritional imbalance. A postoperative program of (1) parenteral infusions with plasma protein hydrolysate with dextrose solutions, (2) blood transfusions to control hemoglobin levels, and (3) forced oral feeding by diet and supplementary mixtures is outlined. Positive nitrogen balance, maintenance of preoperative hematocrit and total protein levels, and a minimum loss of weight are achieved by the plan, as shown by the

included case reports. A smooth uneventful convalescence and early rehabilitation is attained.

Conclusion

A postoperative convalescence without complications or serious weight losses with early rehabilitation to normal is the goal of colon surgery. The adoption of well planned and executed parenteral and oral programs for the preoperative, operative and postoperative nutrition will help to reach this goal. This program is designed to keep the patient as near normal a physical and physiologic being as is possible with the knowledge available today.

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ROENTGEN THERAPY FOR PRURITUS ANI

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X-ray irradiation of the anal region often brings about prompt and lasting relief from the paroxysm of anal itching.

The predominant symptom of itching usually appears only periodically during the early stages of the disease. With frequent recurrence of itching the chronic stage is reached and the identity of the disease is proven.

Often the patient has gained temporary relief from ointments, lotions, or some popular publicized rectal remedy. Failure to respond to such remedies often prompts the patient to seek medical managment.

Scott[1] reported that x-ray therapy should be the last form of treatment to adopt in anal or anovulvar pruritus. In this group of cases x-ray therapy was the first and usually the only method of treatment used.

The etiology of pruritus ani cannot always be determined. Cattell[2] believes that in the majority of cases which he has observed that the pruritus has no known cause and he classified them as idiopathic type. Cantor[3] offers a comprehensive classification based on specific etiological causes. He has included in his classification every known or presumed cause of pruritus ani. Buie[4] expresses the view that hypertrophied anal papillae, phlebitis, varicose veins and hemorrhoids, instead of causing anal pruritus probably merely accompany it.

The presence of pruritus ani in diabetes, cholecystitis, hepatic disease, kidney disease, etc., is not questioned. These conditions, however, comprise only a very small percentage of patients to be treated for pruritus ani. Routine physical examination usually offers substantial evidence of the presence of such organic disease and allows corrective measures to be taken.

The average patient suffering from itching of the anus desires prompt and immediate relief. He is not particularly interested in the cause and it is therefore of practical importance to get treatment started as soon as possible. The etiology in the cases studied for the most part was considered idiopathic.

The etiology cannot always be determined in cases of pruritus ani. It is sometimes due to an allergy, chemical irritation, eczema, diabetes, rectal pathology, etc. There still remains a very large group of cases in which no etiology is determined. This is sometimes classified as idiopathic pruritus ani, or according to Cantor's[3] classification: cryptogenic pruritus ani. The etiology was not determined in most of the cases in this series.

Regardless of the type of therapeutic agent used, good hygienic measures must be instigated. It is considered advisable to give written instructions to each patient with due emphasis on cleanliness and to abstain from the use of counterirritants.

Five simple rules that will fit most cases are as follows:

(1) Never scratch the anus. It is important to explain that the paroxysm of itching usually lasts no longer than 30 to 45 seconds. If scratching can be avoided during that brief period the itching temporarily disappears. With proper self-discipline, scratching during the awake hours can be avoided.

(2) Cleanse the anus after stool with warm water and cotton. This must be done in a gentle manner avoiding a rubbing motion.

(3) Use only mild soap for bathing. Some of the soaps are irritating.

(4) Avoid constipation and

(5) Avoid condiments.

The use of sitz baths is encouraged especially where a definite cellulitis exists. It has definite cleansing effect and the moist heat is beneficial in pruritus ani the same as elsewhere if cellulitis exists.

Saunders[5] reported on treatment of thirty cases of pruritus ani by roentgen therapy. Twenty-one of his thirty cases were improved. His average dose was 495 R-units. He felt that filtration added no particular therapeutic advantage.

Shapiro and Rothman[6] believe that using "soft" x-rays, a machine of 80 kilovolts for example, is the technic of choice. They used small doses of 41 to 82 roentgens, usually repeated after two weeks and exceptionally after one week. Thirty-eight of their patients were given x-ray treatments. Ninety-three and one tenth per cent of the 58 patients on whom follow-up could be made were successfully treated by x-ray, lotions, ointments and hygiene.

So that x-ray treatment can be properly evaluated it is important to exclude all other methods of treatment and apply only x-ray to the anal region and thus determine the results obtained from this alone. With the one exception of establishing proper hygiene this plan was followed. The patients were examined and proper notation made of coexisting anal, rectal or colon disease. Search was made for possible organic diseases such as diabetes, and after they were excluded x-ray treatments were instigated.

The x-ray treatment in these cases was a fairly well standardized and routine method. The patient was placed in the prone position firmly retracting with his hands the right and left buttock. It is desirable for the x-ray to reach as nearly as possible to the anopectinate line. On several occasions a patient returned with the itching limited to a narrow collar close to Hilton's white line. With proper buttock retraction this can be avoided.

TABLE I

Patient	*Sex*	*No. of Treatments*	*No. of Series*	*No. of R-Units*	*Type of Relief*	*Treatment other than X-Ray*
T. W.	m	4	1	640	complete	injections
R. M.	m	1	1	354	complete	
R. M.	m	1	1	246	complete	
R. P.	m	4	1	560	complete	
G. S.	m	2	1st	442	complete	injections
		4	2nd	460	complete	
		6	3rd	1494	complete	
A. G.	f	3	1	525	complete	
L. O.	m	4	1	640	complete	
D. L.	f	4	1	1108	complete	
C. D.	m	4	1	1236	complete	
N. H.	f	4	1	590	complete	
J. A.	m	5	1	1144	complete	
A. C.	f	4	1	700	complete	
H. T.	f	3	1	480	complete	
R.P.	m	3	1	395	complete	
R. B.	f	4	1	640	complete	
C. M.	m	6	1	1569	complete	
L. Z.	m	4	1	970	complete	
W. S.	f	4	1	791	complete	
M. H.	m	2	1	320	complete	
T. S.	m	4	1st	576	complete	
		5	2nd	800	complete	
L. F.	f	2	1	482	complete	
G. T.	m	1	1	246	complete	
H. M.	m	6	1	1916	complete	
F. H.	m	5	1st	1196	complete	
		6	2nd	1392	complete	
H. C.	m	18	1	2872	complete	
G. W.	f	4	1	660	complete	
A. M.	m	6	1	1165	complete	
W. N.	m	4	1	747	complete	
C. O.	f	4	1	640	complete	injections
E. S.	m	4	1	640	complete	
P. H.	f	4	1	640	complete	
F. P.	m	4	1	1031	complete	
E. W.	f	4	1	476	complete	
C. L.	m	4	1	640	complete	
F. P.	m	1	1	160	complete	
L. S.	f	4	1	560	complete	
L. H.	m	4	1	640	complete	injections
W. K.	m	4	1	640	complete	injections
C. G.	m	1	1	160	complete	
R. O.	f	4	1	640	complete	
W. S.	m	4	1	640	complete	
A. C.	m	1	1	160	complete	
F. P.	m	4	1	1031	complete	
Total		188		36,054		

Females 14
Males 29
Minimum no. of R-Units 160
Maximum no. of R-Units 2872
Minimum no. of treatments 1
Maximum no. of treatments 18
Average no. of treatments per case 4.372
Average no. of R-Units per case 838.465

The x-ray machine delivered 140 K.V.P. and the x-rays were of the "hard" penetrating type.

TABLE II

Patient	Sex	No. of Treatments	No. of Series	No. of R-Units	Type of Relief	Treatment other than X-Ray
H. R.	m	3	1	759	partial	
J. T.	m	3	1	480	partial	ointment
R. V.	f	3	1	480	partial	ointment
D. R.	f	4	1	660	partial	
A. H.	m	6	1	1109	partial	
K. L.	m	4	1	740	partial	injections
R. H.	m	4	1	740	partial	ointment
A. K.	m	4	1	776	partial	ointment
F. M.	m	1	1	218	partial	
H. S.	m	4	1	744	partial	
R. S.	m	1	1	390	partial	ointment
J. W.	f	1	1	175	partial	
A. T.	f	1	1	144	partial	injections
C. T.	m	4	1	640	partial	
R. S.	m	3	1	826	partial	
C. R.	m	3	1st	693	partial	injections
		2	2nd	390	partial	
		3	3rd	495	partial	
T. P.	f	4	1	528	partial	
P. C.	m	3	1	480	partial	
L. D.	m	4	1	1048	partial	injections
W. E.	f	5	1	1172	partial	
J. R.	f	4	1	785	partial	
J. C.	f	2	1	520	partial	
J. M.	f	3	1	495	partial	ointment
T. P.	f	4	1st	826	partial	
		5	2nd	1158	partial	
		3	3rd	648	partial	
F. F.	f	4	1	1154	partial	injections
H. S.	f	4	1	640	partial	
E. D.	m	3	1st	490	partial	
		3	2nd	480	partial	
C. F.	m	1	1	175	partial	
R. K.	m	5	1	795	partial	
D.P.	f	5	1	1520	partial	
E. F.	m	4	1	640	partial	
E. R.	m	4	1	700	partial	
W. S.	m	4	1	640	partial	ointment
A. Y.	m	3	1st	888	partial	
		3	2nd	480	partial	
F. R.	f	4	1st	1216	partial	
		3	2nd	480	partial	
Totals		142		28,417		

Females 14
Males 21
Minimum no. of R-Units 175
Maximum no. of R-Units 1578
Minimum no. of treatments 1
Maximum no. of treatments 12
Average no. of treatments per case 4.057
Average no. of R-Units per case 811.914

The usual plan for treatment consisted of weekly doses for four weeks of 140 to 160 R-units. The blonde or fair skin patients received smaller doses than the dark or brunette patients. Treatment was often discontinued when symptomatic relief occurred

prior to the usual course of four treatments. Using the technic of small doses, treatment could be repeated every six months. In this manner the limits of tolerance were never approached.

Ointments, moist compresses, internal medication, etc., were used when irradiation failed or the relief was partial. They seemed most often benefited by mild coal-tar derivatives, barbiturates, and in the acute exacerbations moist compresses and bedrest. Acetylsalicylic acid may be tried and is sometimes effective.

Extreme care should be exercised in the use of anesthetic ointments, because hypersensitivity is common.

The clinical group comprised 100 patients with pruritus ani treated by x-ray, between the years 1940 and 1948, and on eight patients no follow-up could be made. Ninety-two were used in the tabulation. They were divided into 3 groups according to the treatment results: (1) "complete relief". when the patient remained symptomless without any treatment during an observation period of 6 months or more or when the patient had recurrence of pruritus after 6 months and was again completely relieved by irradiation alone for an additional period of 6 months or more. (2) "partial relief", when the patient remained almost symptomless for 6 months or more, having only mild attacks of pruritus which were relieved by resuming hygienic measures or having additional x-ray treatments. (3) "failure" when the patient relapsed frequently with definite pruritus and showed no improvement when additional x-ray therapy was given.

The partial relief group is a division of the cured group. They were satisfied with the results but found that they were candidates for relapse unless good hygiene was followed.

All of the cases were adults between the ages of 21 and 70 years. Fifty-eight or about 63 per cent of our patients were males and thirty-four or about 36.9 per cent females.

Forty-three patients were completely relieved from irradiation of which 29 were males and 14 were females. The least amount of irradiation was 160 R-units and the most was 2,872 R-units. The fewest number of treatments was 1 and the greatest 18. The average number of treatments was 4.372 and the average number of R-units 838.-465. Three patients had recurrence after six months and required additional x-ray. Five needed treatment for internal hemorrhoids and in these cases the injection treatment was used after the itching had disappeared.

Partial relief was experienced by 35 patients, 14 females and 21 males. The minimum number of R-units was 175 and the maximum 1,578. The minimum number of treatments was 1 and the maximum 12. The average number of treatments per case was 4.057 and the average number of R-units per case 811.914. Five patients required more than one series of treatments and were improved but not entirely relieved following each series of treatments. Six were given injections for internal hemorrhoids and eight used ointments at intervals following the x-ray treatments.

Fourteen cases were listed as failure. In this group there were 6 females and 8 males. The minimum number of R-units was 140 and the maximum was 3,794. The

minimum number of treatments was one and the maximum fourteen. The average number of treatments per case was 6.785 and the average number of R-units per case was 1348.357. Four patients had more than one series of treatments. One patient (G.M. Table III) was proven to have a gastrointestinal allergy. The itching stopped when the allergy was treated. One patient (J.M. Table III) had a cure following surgery for papillitis and internal hemorrhoids. Two patients attributed their improve-

TABLE III

Patient	*Sex*	*No. of Treatments*	*No. of Series*	*No. of R-Units*	*Type of Relief*	*Treatment other than X-Ray*
R. S.	f	4	1st	845	failure	
		3	2nd	650	failure	
		4	3rd	720	failure	
W. H.	f	2	1st	608	failure	
		4	2nd	1102	failure	
G. M.	m	3	1	846	failure	cured allergy
J. B.	m	5	1	635	failure	yes
J. M.	f	4	1	957	failure	surgical relief
G. J.	f	4	1	640	failure	improved by oint.
E. L.	m	4	1	528	failure	improved by oint.
K. S.	m	1	1	140	failure	yes
K. R.	f	6	1	1846	failure	
J. Z.	m	12	1	1666	failure	
J. B.	f	6	1st	1425	failure	
		8	2nd	2369	failure	
C. G.	m	7	1	1225	failure	
R. H.	m	4	1	740	failure	
C. Z.	m	5	1st	840	failure	
		4	2nd	640	failure	
		5	3rd	555	failure	
Totals		95		18,977		

Females 6
Males 8
Minimum no. of R-Units 140
Maximum no. of R-Units 3794
Minimum no. of treatments 1
Maximum no. of treatments 14
Average no. of treatments per case 6.785
Average no. R-Units per case 1348.357

ments to the use of ointments and the remaining ten cases had frequent recurrences of itching without relief from irradiation.

Thirty-four females and fifty-eight males were treated (with the total number of x-ray treatments for the series being 425) and the average per case 4.619. The total R-units for the series was 83,448 and the average R-units per case 907.043.

Summary

A total of 92 patients with pruritus ani were treated with irradiation. The etiology was determined in only two cases, one with a gastrointestinal allergy, the other with papillitis and internal hemorrhoids. All other cases were considered idiopathic. Proper hygienic habits were instigated in all cases. Irradiation was given before any other method of treatment was employed. Forty-three cases were completely relieved from itching, thirty-five partially, and fourteen were not improved by x-ray therapy. From the data obtained, x-ray therapy is definitely indicated in pruritus ani.

Following the treatment for pruritus ani measures were taken for treatment of coexisting anal conditions. The hemorrhoids were injected with 5 per cent phenol in sweet oil. Other conditions were treated as nearly as possible in a nonsurgical manner.

The treatment must be as nonsurgical as possible, removing only the obvious pathological conditions. An anal fistula is an example of a condition where surgery is indicated. Most of the anal diseases are only co-existing with the pruritus and are not the cause of the pruritus.

Surgery as a method of treatment for pruritus ani was not employed in the group of cases.

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SOLITARY DIVERTICULITIS OF THE CECUM

A Case Report

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The general surgeon is probably called upon to operate on the right lower quadrant of the abdomen more frequently than any other region, and most commonly for appendicitis. Solitary diverticulitis should not be confused with multiple diverticulitis which may involve the cecum and ascending colon. Solitary cecal diverticula are seldom mentioned in the standard textbook of surgery.

The number of cases reported in the literature is well under fifty. It is possible that numerous additional cases have been observed but not reported[1].

The preponderance of diverticulitis of the cecum in male over its incidence in female is 2 to 1. As to age incidence the condition usually occurs in persons about 35 years of age, the majority being close to the fifth and sixth decade of life[2]. Most of the diverticula contain fecoliths.

According to Schnug[3] the sites of cecal diverticulitis in order of frequency are 1) externolateral 2) anterior 3) ileocecal curvature.

Telling[4] in 1908 classified diverticulitis as congenital (true) or acquired (false). The congenital diverticulitis consists of all layers of the bowel wall, that is, mucosa, submucosa, muscularis, and serosa, while the acquired type have the deficiency in the circular muscles of the wall with herniation of the mucosa through the deficiency.

There are many theories attributed to the formation of diverticulitis. Collender[5] states the cecum is devoid of appendices, epiploicae and is the thinnest part of the colon. Greenfelder and Hiller[6] think that false diverticula are caused by traction of adhesions on the cecal wall or erosion of the stump site after an appendectomy, and as a result silk sutures migrate in the cecum, or a weakness following rupture of stump abscess into the cecal lumen. McGrath[7] states that loss of elasticity of the muscle layer may occur because of degenerative process. A relaxed segment may be caught between two constricting segments and a herniation started. In addition Wilson[8] believes that old age, obesity, vascular stasis, inherent weakness, or atrophy of fat along vessels which penetrate the bowel wall, and also increased intracolonic pressure favors formation of diverticulum. Recently Dixon[9] suggested the following plausible sequence of events producing diverticulitis—that diverticula are probably formed by contraction occurring simultaneously distal and proximal to normal segment of bowel. The increased tension in the normal segment, produced by the above mechanism, causes herniation of small portions of the mucosa through the wall of the bowel at areas of least resistance. However, none of these etiological factors suggested and advanced explain conclusively and accurately the production of diverticulosis.

The diagnosis is not easily made until the abdomen is opened. Preoperatively most cases are thought to be appendicitis. A history of constipation, vomiting, temperature, pain in the right lower quadrant with tenderness on pressure, paplable mass, and leucocytosis may or may not be present. One might expect x-ray studies by barium enemas to be of value in differential diagnosis involving the condition, yet Jonas[10] considers a barium enema contraindicated in the actue stage because of the possibility of dissemination of the infection. It is frequently ineffectual in demonstrating the presence of diverticulum when it is plugged by inspissated feces or filled with actual fecoliths. It is a common observation among roentgenologists that of all diverticula present in the multiple form of the disease only a small number are usually demonstrated by a single barium enema. Cancer, tuberculosis, actinomycosis and nonspecific ulcers should be kept in mind.

The prognosis is favorable for complete recovery if the surgeon is capable of performing the necessary operative procedure. Diverticulitis is prone to progress to perforation and abscess formation.

A review of the literature shows that the type of operation performed for diverticulitis is varied according to the extent of the lesion. The simplest procedure should be used that is compatible with eradication of the condition. A small uncomplicated diverticulum may be inverted with a purse-string—the larger may require excision before inversion. Large inflamed diverticula lying close to the ileocecal valve, or between leaves of mesentery so as to jeopardize the cecal blood supply, require extensive resection. Schnug feels that because of acute inflammation in the cecum nothing should be done except draining of abscess, if present. Gatewood[11] advocated local excision and appendectomy, while Jonas and Owings feel that a resection of the entire cecum, with transverse ileocolostomy should be done. On the other hand Frehling[12] advocates a cecostomy through the diverticulum, which is excised and then sutured to the parietal peritoneum, creating a fistulous opening to the exterior.

A case report of solitary diverticulitis is presented. Mrs. R. D., age 37, obese, housewife was admitted to the Port Allegheny Hospital on March 14, 1950. Her past history is negative except for measles, mumps, and chicken pox. Negative family history. She had a cholecystectomy in 1946, and a hysterectomy with a secondary appendectomy in 1949. She complained of attacks of pain in the right lower quadrant sometimes accompanied by nausea and vomiting, and always by constipation. Any stool passage was also accompanied by right lower quadrant pain. These attacks lasted two to four days but were relieved by administration of sulfonamides and penicillin. In view of the fact that in these attacks she had an associated right lumbar pain, a G.U. study was made by Dr. Elmer Hess, at Erie, Pa., with negative results. Physical examination revealed a blood pressure of 140/80, two post-operative scars, and a tenderness on pressure over the right lower quadrant. She had a normal C.B.C., blood, urine, and x-ray findings. A tentative diagnosis of postoperative adhesions was made and an exploratory laparotomy revealed many adhesions to the cecum with a diverticulum 4 cm. by 5 cm., and 6 cm. from the ileocecal junction. The diverticulum contained

bowel walls, infected and somewhat edematous. This was excised and patient became afebrile around the fourth day, with an uneventful recovery.

Conclusion

Solitary diverticulosis is an unusual and rare condition which closely simulates appendicitis clinically, and should be considered in differential diagnosis of lower right quadrant pain, and a search should be made at operatoin, if other conditions do not explain the clinical picture.

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CONSTIPATION*

(PART II)

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TREATMENT

A decision regarding therapeutic procedure for the constipated patient must be based entirely upon the provocative factor or factors determined by diagnostic means. In treating patients with digestive disturbances the physician must take into consideration each patient's idiosyncrasies, likes and dislikes, tendency to allergy and ability to swallow tablets or liquids.

Regularity:—The majority of cases of chronic constipation are caused by neglect to respond promptly to the call, which usually occurs soon after breakfast. In any event a most important means of establishing regularity is to set a definite time each day for this purpose.

In many instances the trouble starts during childhood, at which time the importance of defecation is not sufficiently stressed by the parent. Neglect to allow sufficient time for evacuation or to center attention upon its accomplishment may also be responsible for failure.

Fluids:—An abundant quantity of fluids, especially of water, is a helpful means in keeping the bowels moving satisfactorily. It is a good plan to drink a tumblerful of cold water on arising, allowing an interval of at least one-half hour before breakfast. In addition, from six to eight glasses of water should be taken throughout the day between meals. Contraindication to excessive fluid intake should be taken into consideration. Water not only promotes peristalsis, it facilitates the dilution of the intestinal contents and aids in promoting digestion and defecation. However, ice water and other very cold fluids have a tendency to chill the interior of the stomach. They lower the temperature, interfere with gastric secretion and may increase motility to the extent that cramps and diarrhea occur. Repeated often, this may lead to gastric or intestinal catarrh.

The minimum daily requirement of water under working conditions and with sufficient carbohydrates to prevent ketosis is approximately 1,000 c.c. There are some

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persons who cannot drink water. It causes irritation of the stomach and heartburn. This may be due to its mildly stimulating effect.

The patient may ask whether he is permitted to drink water or other fluids with the meal or after it. A normal individual who has no gastroptosis, pylorospasm, dilatation of the stomach (atony), organic or inorganic, may drink fluid in greater or less quantity provided the food is thoroughly masticated. It aids the digestive action of the saliva, increases the flow of gastric juice, its pepsin and acidity. It also augments the flow of bile and thus helps in better absorption of the food. Distilled water exerts the same beneficial effects.

From chemical and physiological studies we know that water does not actually mix with the gastric contents but passes along a channel formed on the surface. Hunger contractions are diminished by sips of water. We have found small sips of water useful in many cases of nausea.

Mineral Waters

Spa treatment of gastrointestinal conditions has been recommended as a panacea in biliary affections, gastric and colonic states, kidney and cardiovascular diseases. Well-known spas include Karlsbad, Nauheim, Vichy, Saratoga Springs, Hot Springs. Lesser known spas both in the United States and Europe have also been the mecca of sufferers.

We have previously discussed (J.A.M.A.) the various mineral waters, their chemical composition and their action as therapeutic agents. The physician was cautioned not to place too much faith in the waters alone, but have the patient follow a prescribed regime as to rest, diet, etc., only in this way will he be benefited by a stay at one of these watering places.

What is the action of these mineral waters when taken internally in conjunction with baths, packs, douches, etc.? To clarify this question attention should be directed to the type of water encountered at the various springs: *Alkaline* waters are composed of carbonates and bicarbonates, borates and silicates in greater or smaller quantities; *saline* waters contain chlorides, nitrates, or sulfates. The *alkaline salines* are a combination and in the *acid* type one finds free sulphuric or hydrochloric acid.

The alkaline waters are Vichy, Appolinaris, Seltzer, Karlsbad and Marienbad. The alkaline salines are Saratoga Springs and White Rock. Villacabras is neutral. Pluto, Friedrichschall, Rubinat, Apenta and Hunyadi Janos owe their action to sodium sulfate and magnesium salts. Among the purgative waters, the most important ingredients are Glauber's salt and epsom salt.

These waters may also be classified according to their special elements. Sulphur waters contain sulphuretted hydrogen (Sharon Springs, Richfield Springs). Chalybeate and ferruginous waters contain iron. Arsenical waters include the Levico and Bourboule; Alum waters, bromine, iodine, lithium—the lithium occurs in minute quantities only.

When used at their source, these mineral waters are more effective than artificially prepared waters although they contain the same ingredients. As previously mentioned, the beneficial effect of treatment at these spas may be due not only to the waters per se, but to better hygiene, climate, rest, freedom from care and business worries, scenic conditions, exercise and regulation of all habits. They may also be due to the drinking of larger and measured quantities of fluid and the soothing effect of the mineral baths, although the action of the latter is purely local and reflex. Practically there is no absorption of the dissolved salts through the skin.

We have observed the treatment at the various spas, both in this country and abroad, and found that many patients, after soujourning there for three or more weeks, left with high hopes for the future, looking forward eagerly to their return at an early date.

Disturbances of the nervous system:—Avoidance of depression, overwork, or insufficient rest or sleep, by releasing the tension of the nervous system, will prove instrumental in furthering the process of evacuation. This is understandable when one considers that the movements of the stomach and intestines are stimulated or inhibited by impulses from the central nervous system.

Exercise:—Exercise is helpful in the majority of cases; it is of special advantage when indulged in outdoors. The value of exercise has frequently been demonstrated in constipated persons who, although previously regular, became unable—because of illness or other cause—to continue their usual habit of walking. Walking is to be preferred to the more strenuous forms of exercise, if undertaken regularly and in moderation. It increases the appetite and has a general tonic effect especially in nervous individuals. The inhalation of pure air and the increased oxygen in the blood stimulates respiration and circulation, thus stimulating the abdominal muscles to greater activity. For some patients, exercise might prove disastrous especially if carried out too strenuously. This might apply in persons of advanced age, in pulmonary or circulatory disorders and in some diseases of the abdominal organs. In these cases rest, even prolonged rest for several weeks, will be found more efficacious than exercise.

Physiotherapy:—Individuals suffering from chronic constipation, general and local stimulation frequently combined with rest, diet and other means, is indicated in restoring the bowels to their normal tone. In the *atonic type* of constipation these measures include massage and low frequency currents, (Sinusoidal, Morse wave), while in the *spastic type* heat in the form of diathermy or short wave is advised.

Psychotherapy:—Reference has previously been made to the fact that constipation in many cases is attributable to depression of the nervous system. This causes a diminished response to the stimuli which excite intestinal activity and tension of the muscles of the body, particularly those of the gastrointestinal tract including contraction of the anal sphincter.

Constipation and depression and neurasthenia in these patients often represents a vicious circle. A lapse of one or two days in evacuation of the bowels is apt to lead them to the conviction that it is due to an obstruction or lesion of some sort. Worry,

depression or other adverse mental attitude then leads to inhibition of muscular activity, contraction of the anal sphincter, and consequent prevention of fecal evacuation.

A study by Alexander and Menninger of 40 patients, suffering from depression and constipation corroborates, the clinical observation regarding the frequent coincidence of these conditions in 76.5 per cent.

Hurst points to constipation as a common symptom of depression of the nervous system among soldiers suffering from neurasthenia and other war neuroses. The constipated condition gradually disappeared when the nervous system returned to normal, following a period of rest and psychotherapy. He has found the effect of a thorough x-ray and sigmoidoscopic examination of value in dispelling the fear of cancer or obstruction in nervous individuals suffering from constipation.

Monat also believes appropriate psychiatric treatment to be beneficial in psychoneurotic and psychiatric patients suffering from constipation, inasmuch as he regards the latter condition as being "not a result of bad habits as much as it is an escape from reality".

Diet:—A nutritious and well-regulated selection of food in the dietary of persons who are inclined to become constipated, unaccompanied by any other therapeutic measure, may be all that is required for complete relief.

By a well-regulated diet is meant one which will produce sufficient mechanical and chemical stimulation of the intestines to promote peristalsis. Firstly, it is important that the quantity of food consumed is not of a limited amount. So many persons—especially the obese—by restricting the quantity of their daily intake, deprive the bowels of the necessary stimulus. Secondly, it is also important that the food contain a sufficient quantity of residual material. This would especially include a considerable amount of vegetable and fruit, of which cellulose is an important ingredient; they also contain some organic acids and sugar. Another advantage as far as cellulose is concerned is that it increases digestive secretions and bacteria.

Meat, fish and eggs are important for their nutritive values but they contain little cellulose. Nevertheless they provide necessary protein and add to the quantity of bulk required for further elimination.

Foods such as macaroni, rice and potatoes, because of their extreme digestibility, contribute only a limited amount of roughage, and do not advance mechanical stimulation. The quantity of these foods should therefore be restricted in those who are constipated.

The type of bread chosen in the dietary should receive consideration. White bread is interdicted in these cases, whereas the use of whole-wheat bread is recommended. According to Hurst, a grain of wheat is made up of the endosperm (or kernel), the germ (or embryo) and the bran (the outer envelope of the grain). Bran contains 18 per cent of the cellulose in the whole grain, the germ contains only 1.8 per cent, and the endosperm only 0.7 per cent. White bread and certain varieties of brown bread (which are made from the endosperm and the germ) contain only about one-fifth of

the cellulose present in whole-wheat bread. For this reason whole-wheat bread and oatmeal are excellent material for supplying roughage.

General Rules

Care should be taken that all foods are cleanly cooked and served, and no foods that have been standing for sometime in a cooked condition are to be eaten.

The mouth should be cleansed with warm water, preferably with a little bicarbonate of soda dissolved in it, before and after meals and when possible at other times. Correction of any dental condition that may exist and the use of dental floss is advisable.

Adopt the plan of either taking four meals a day, moderate in amount, or three meals a day with supplemental meals between them and before retiring.

Thorough cooking and cutting foods finely on the plate or mashing them, complete mastication and slow eating are advisable. Foods should not be eaten under conditions of fatigue, mental excitement or depression and a rest for an hour after each meal is advisable.

No condiments such as sauces, mustard, pepper, spices, lemon, etc., are allowed, and all foods should be plainly cooked and served and never in made dishes. When there is distress in the stomach, drink a glass of flax-seed water.

During the day, a glass of water before meals or sipping a glass of water one hour after the meal is sufficient.

Foods Permitted

Bouillon, broths, consommé and purées. Any of the well cooked cereals, served with milk sugar instead of cane sugar and fresh cream.

Eggs in any form except fried, not more than two a day, bread, rolls, zwieback, biscuits, and crackers.

All foods made of gelatin; not more than 3 ounces of lean meat, poultry, fish or game in a day. Take a half pint of fresh cream, as much unsalted butter and olive oil as possible.

Any of the well cooked vegetables can be eaten but they must be cooked to softness. Peas, beans, lentils, being the most wholesome for you. The green vegetables and salads are permitted.

Other foods of value are custard, eggs, milk, peeled fruits, jellies, marmalades, apples, pears, asparagus, green chickory, spinach.

Formula for Constipation:—(Make up and use if necessary). ½ pound of figs, ½ pound of dates, 6 stewed prunes with the juice run through a meat grinder. Add half ounce of pulverized senna and one ounce or more of granular agar-agar. The whole is made into a firm mass and kept cool. A small olive-sized piece is eaten with each meal and gradually reduced to a smaller and smaller piece on retiring and then

none. The senna or agar-agar may be increased depending upon the needs of the patient.

Bulk-producing agents:—Bulk-producting agents such as agar, psyllium seed, bran and prunes are prescribed by the physician and are also employed as self-medication by the laity. These preparations are unabsorbable and retain fluid, thus causing a bulky stool. Many of the advertised proprietary concoctions of colloid laxatives owe their efficacy to one or more of these ingredients. In using one or the other, a considerable quantity of fluid intake is an essential requirement. They have some disadvantages, and patients should be warned against their indiscriminate use. Digestion is retarded because food particles become coated, food and mineral elements are lost—especially calcium and phophorus—due to the fact that absorption is retarded. Normal stimulation of the intestines is lessened by their demulcent action. Bacteria find them good culture medium. They give a sense of extreme fullness in the stomach, flatulence, and at times they may cause obstruction when large quantities of fluids have not been taken. Finally, a specific allergic sensitivity to the various products may be produced. Other bulk-producing agents are Siblin, Cellothyl, Konsyl, Mucilose, Tricostivin and Metamucil. In addition to the plain methyl cellulose several combinations of this new laxative are in vogue: Kondretabs—an Irish Moss concentrate—of which one or two tablets are taken three times daily with a full glass of water. It is not to be chewed.

In hyperirritable colon the constipation should not be treated by giving irritating food residues and stimulating drugs, but rather softening and bulk-producing agents are indicated. In the rectosigmoid type, small, slowly introduced and retained instillations of olive oil or 25 per cent magnesium sulphate solution reach up to the descending colon and have a soothing and antispasmodic effect.

Agar is a seaweed and is found along the eastern coast of Asia. The dose is 1 to 4 drams (4 to 15 gm.). It forms a jelly-like substance in hot water, and is insoluble in cold water. It usually requires the addition of cascara or phenolphthalein.

Psyllium is the seed of a plantain. It is a roughage, and the whole seed may pass through the bowel unchanged or cause fecal impaction in the lower intestine. The dose is one or two teaspoonfuls placed dry in the mouth followed with a full glass of water. Several patients have complained of difficulty in swallowing after taking psyllium seed with insufficient water. Fluoroscopic examination with a small quantity of barium revealed an impaction in the esophagus. Hulled psyllium is less likely to cause obstruction.

Bran is rich in Vitamin B-complex. It may irritate the intestinal mucosa. In spastic constipation it may increase the spasticity. The use of bran is to be interdicted in patients who have hyperacidity, ulcer, irritable colon, diverticula or mucous colitis. Steamed or processed bran is less irritating and less laxative than commercial bran. The dose is about 1 ounce (30 gm.) or the equivalent of 5 tablespoonfuls. Graham or wholewheat bread, or natural bran-containing cereals may be used when not contraindicated.

Purgatives

These drugs act by increasing peristalsis and thus help in evacuating the bowels. Care must be taken not to prescribe a larger dose than necessary since, instead of producing a normal movement, diarrhea and irritation may occur.

These drugs are abused by the laity; many are habitual users of cathartics without realizing that they are injurious. Patients should be admonished not to take purgatives when they have cramps or other abdominal conditions. Rupture of an inflamed appendix may be caused through ignorance.

Preparations which we have prescribed include cascara sagrada, aloes, senna, rhubarb, podophyllin, buckthorn (frangula), etc.

Cascara sagrada (*Rhamnus purshiana*):—This may be given in the form of the fluid or the solid extract. The fluid extract is preferable; the dose is about 15-30 minims (1-2 c.c.). The aromatic fluid extract, of which the dose is about 30-60 minims (2-4 c.c.), to which magnesia was previously added and flavored with licorice extract, anise, coriander, wintergreen and saccharin. Both preparations contain 18 per cent alcohol. The extract is three times the strength of the bark, and may be given in doses of 1-5 grains (.06-0.3 gm.). Cascara evacuant may be given in doses varying from 10 to 20 minims.

Cascara:—Cascara is not habit forming; it softens the stools without irritation and after attaining regularity, it may gradually be withdrawn. By means of its bitter taste, it acts also as a stomachic. It may be given three times a day or in a single dose on retiring.

Aloes (*Aloe Barbadensis; A. Socotrina*):—Extract from leaves of aloe vera and other species. This preparation contains the dried juice of the various species of leaves found in West India, Africa, etc. It is a very bitter preparation and may also be used as a stomachic. Small doses are laxative, larger doses may gripe. Therefore it is advisable to combine it with belladonna or similar drugs. It must be used carefully in patients who are pregnant, menstruating or in those who have hemorrhoids. In anemic patients, when combined with iron, they help correct constipation. They are not choleretics or cholagogues.

Various preparations of aloes are employed in medicines: the dried juice of the leaves (socotrine) gr.1 to gr.11; or as Lady Webster Dinner Pills, gr.11; the tincture (10 per cent), dose 15 to 30 minims (1 to 2 c.c.). Aloin, belladonna and strychnine pills consist of 1/5 grain aloin, 1/64 grain strychnine, extract of belladonna grain 1/8, and ipecac 1/16 grain.

Senna (*Leaflets of cassia acutifolia and cassia angustifolia*):—This is effective but irritant, and should be given in acute constipation rather than in chronic cases. When combined with various carminatives or extraction of the resins, its drastic action is reduced. When administered in the form of the fluid extract a dose up to 30 minims (2 c.c.) may be given. The syrup, 25 per cent, is flavored with coriander, of which the

dose is ½ to 2 drams (2 to 8 c.c.). The compound senna powder (compound licorice powder) is composed of 18 per cent senna, 8 per cent sulphur, flavored with licorice and fennel; the dose is 1 dram. This powder may be prescribed for patients who require thorough cleansing before x-ray examination by means of a barium enema or intravenous pyelogram. It is advisable to instruct the patient to take a teaspoonful in one-half glass of hot water about nine o'clock in the evening and to use a low enema consisting of two or more glasses of plain warm water in the morning. It is also useful during pregnancy.

The compound infusion of senna (black draught) contains senna, magnesium sulfate and manna. The laity uses the senna leaves (pods) in making an infusion (15 to 30 pods). A glassful of water with 15 or 30 senna pods is allowed to boil for ten minutes, then to steep for one-half to one hour; it is then strained and taken at one dose on retiring. It is a rather heroic purgative. Another favorite way of preparing it is to boil 10 to 15 pods with prunes, then to eat the prunes and drink the juice. Or again, raisins may be chopped with the senna, and one-half to one teaspoonful of the mixture taken. Here a word of caution is necessary. Senna should be strongly forbid den in patients who have abdominal cramps, appendicitis or an irritable colon.

Rhubarb:—Rhubarb grows without cultivation and is used by housewives as an adjuvant to meals; when prepared properly it is tasty. In small doses it has an astringent action due to its content of tannic acid. In larger doses it is laxative, producing little colic; but due to its astringent action it is inferior to cascara.

The aromatic syrup of rhubarb may be given in 2½ dram doses (10 c.c.). The aromatic tincture contains cinnamon, clove and nutmeg and may be given in 1 dram doses (4 c.c.). Powdered rhubarb, plain or compound, is also used in constitpation.

Podophyllin (Active principle of podophyllum):—A slowly acting drug—generally from twelve to twenty-four hours. It produces a soft stool. When administered in large doses it is a powerful hydragogue cathartic and should be used with care. It has no choleretic or cholagoguic action. The best way to administer it is in pill form, combined with aloes or calomel. Dose: gr. 1/10 to 1/6 (5 to 10 mg.). The contraindications are menstruation and pregnancy, nephritis, colitis, hemorrhoids, and in the aged.

Frangula or Buckthorn bark:—This is the dried bark of *Rhamnus frangula* and may be used like cascara.

Jalap (Tuberous root of Exoginum purga):—The stools obtained after three or four hours are watery. The indications are: ascites, cerebral accidents, high blood pressure, and as an adjuvant when prescribing anthelmintics. Jalap is obtained from the dried tuberous root, and is given in doses of 5 to 20 grains (0.3 to 1.3 grams). Compound jalap powder is composed of 30 grains (2 grams) jalap 35 per cent and potassium bitartrate 65 per cent. Dose: 10 to 60 grains (0.6 to 4 grams).

Scammony (Scammonium resin);—Dose: ½ to grains (0.03 to 0.2 gm.).

Colocynth, Elaterin, Gamboge:—These drugs are of a complex composition and are related to the cucumber family. They produce watery stools, with irritation and hyperemia. Nursing mothers should not be given colocynth because it is excreted by the kidneys and in the milk.

Colocynth (bitter apple) is given in doses of 2 to 5 grains (0.12 to 0.3 grams); larger doses are toxic. The compound cathartic pill is composed of calomel gr.1 (0.06 gm.); compound extract of colocynth gr.1½ (0.1 gm.); resin of jalap gr.⅓ (20 mg.); compound extract of colocynth gr.1⅓ (80 mg.); and gamboge gr.¼ (15 mg.). The vegetable cathartic pill contains extract of colocynth gr.1 (0.06 gm.); resin of jalap gr.⅓ (20 mg.); extract of leptandra and resin of podophyllin each gr.¼ (0.15 mg.); extract of hyoscyamus gr.½ (.03 gm.); and oil of peppermint ⅛ minim (.008 c.c.).

Elaterin is given in doses of gr. 1/20 to 1/10 and repeated in four hours if necessary. Elaterium is given in doses of 1/10 to ½ grain. It is a powerful cathartic and diuretic, and may cause prostration.

Gamboge is gum resin acting as a hydragogue cathartic, the dose is one to two grains (0.06-0.12 gm.). It is an ingredient in compound cathartic pill.

Croton oil (*oleum tiglii*):—This is a violent cathartic, causing extensive fluid evacuations, with colic and tenesmus. Elaterium and croton oil were formerly given to patients who were in uremic or apoplectic coma. The dose is ½ to 1 drop, on sugar or white of egg, bread or lemon.

Phenolphthalein:—This is a form of dye which acts by stimulating peristalsis, mostly in the small intestine. It requires the presence of bile for its action; its activity is prolonged by its absorption and re-excretion in the bile. It produces a large mushy liquid stool; for this reason its dosage must be carefuly supervised. The dose of phenolphthalein is 1½ to 3 grains (0.1 to 0.2 gm.). Large doses have a hydragogue action. In susceptible persons it may cause dermatitis, or erythematous or vesicular rashes. Persistent pigmentaion may result. It may be prescribed in powder, tablet or capsule form, or in an emulsion of mineral oil. The patient should be asked regarding the possibility of sensitivity to the drug, if he had taken it previously.

Castor oil (*oleum ricini*):—This is an old remedy used in constipation. It does not abstract water from the tissues. It has also been employed to bring on menstruation, as it has a tendency to congest and stimulate the female pelvic organs. At term it stimulates the uterus and thus brings on labor pains. The physician is therefore cautioned not to prescribe it to a patient who is pregnant or who has a pelvic inflammation. It is useful when the patient is in need of a thorough cleansing when constipation, fermentative diarrhea, dysentery, various forms of colitis, intestinal gas, etc., are present. After taking the oil the patient may become constipated for several days and may have a re-accumulation of gas.

Because of its taste patients—especially children—refuse to take it. However, there are various preparations on the market in which the taste and odor have been disguised. The aromatic castor oil is flavored with saccharin, cinnamon, cloves, vanillin

and coumarin. Laxol and capsules of castor oil may also be prescribed, the former in doses of 1 to 4 teaspoonfuls, preferably before breakfast, while the capsules are given in sufficient dosage to produce the desired result. There is also a cold pressed castor oil which is tasteless.

The usual dose of the ordinary castor oil is ½ to 1 tablespoonful before breakfast. To disguise the odor and taste of the oil the laity have devised various "sandwiches" in which the oil is suspended. Orange juice, lemonade or ice water may be used for the first and last layers. It may be flavored with tincture of cardamon or whisky, beer, etc., care being taken not to stir the liquids. Many patients prefer a simpler way, that is, to rinse the mouth with ice water (alone or flavored with peppermint), and then to rinse it again after taking the prescribed dose of oil. This method obviates the necessity of the three layers.

Olive oil:—Olive oil is deficient in vitamins but contains nutritive and digestible fat. When given in one or two teaspoonfuls it may act as a mild laxative. It has a tendency to prolong the emptying of the stomach; in the duodenum it acts as a cholagogue and it also stimulates pancreatic secretion. In large doses it forms a soap-like substance which often is mistaken for gallstones. In fact at one time a preparation known as "Fruitola" was marketed as a cure for gallstones. This "cure" consisted of about 6 ounces of a flavored olive oil and some Seidlitz powders (compound effervescent powder). The usual *modus operandi* was to take one or two of the powders about three o'clock in the afternoon and the olive oil mixture at nine o'clock in the evening. Another powder was taken on arising the following morning. As a rule the patient's bowels would move and numerous lumps, which were nothing more than soap—the fatty acids combined with the alkaline powders—were mistaken by the layman for gallstones.

In addition to being employed for its nutritive value, olive oil is used by rectal instillation in irritative and inflammatory conditions like proctitis and in some forms of ulcerative colitis.

Mineral oil:—Mineral oil does not become rancid; it has no taste, no odor. Unlike olive oil, it has no action on the gallbladder. If given in large doses or continued for a length of time it causes a leakage in some persons. Judiciously employed, mineral oil is a softening and bulk-producing mild laxative. Some investigators claim that mineral oil and its various preparations markedly retard absorption of Vitamins A, K, and some of the other vitamins. They prefer giving the oil between meals; or instead, they advocate the use of cod liver oil or an increased amount of butter in the diet.

Mineral oil may be administered either as the plain liquid petrolatum, 4 drams (15 c.c.); or a 50 per cent emulsion with acacia and flavoring, 2 tablespoonfuls (1 ounce; 30 c.c.); or as an emulsion with phenolphthalein, 4 drams (15 c.c.); containing 1 grain (0.06 gm.) of phenolphthalein.

The public should be warned about the danger of using nose drops, sprays or the inhalation of various preparations containing oil; also of giving laxative doses to chil-

dren. During the act of swallowing some of the oil may enter the lungs and induce fibrous proliferation of the interstitial tissue. Pruritis ani—anal eczema—may be caused by oil in patients who are sensitive to it.

Saline Cathartics:—Salts of sodium, potassium and magnesium are employed as cathartics. When given by mouth, their direct action is confined to the intestines. Magnesium is a depressant to the intestinal muscles, and is utilized against the spastic contractions of barium and lead colic.

Various salts are used in medicine, and among the most popular are: magnesium oxide; sodium phosphate; Epsom salt (magnesium sulfate); Carlsbad salt (sodium sulfate and bicarbonate); Glauber's salt (sodium sulfate); Seidlitz powder (effervescing sodium and potassium tartrate); Rochelle salt (sodium and potassium tartrate); cream of tartar (acid potassium tartrate); and salt of tartar (potassium carbonate).

The salines have other therapeutic uses in addition to their action upon the intestines. They are readily excreted by the urine and therefore act as saline diuretics. The flow of urine is generally decreased during the first twelve hours; it is then increased for about a day. The urine output is augmented when, in addition, theophyllin is given orally.

In digestive disturbances, in hyperchlorhydria, alkalis—such as magnesium hydroxide or Carlsbad salt—are useful. When used as laxatives the salt should be administered in dilute solution, preferably before breakfast. In bedridden patients these salines are less effective and may be irritant. After taking the salts or saline waters some form of exercise is useful.

Therapeutic actions of the salines are: In large doses they act as rapid evacuants as in acute constipation; in food poisoning, in intestinal putrefaction; as a weekly or occasional purge; they deplete the body fluids in dropsy; they lessen the secretion of milk; they remove the mucus in mucous colitis; they are useful in obtaining stool in a search for protozoa; also to eliminate a mercurial cathartic and to deplete the spinal fluid in encephalitis and in intracranial or intraspinal pressure.

Magnesium oxide is a very light powder, and the heavy oxide and carbonate are used both as antacids and as laxatives. The dose is 15 to 30 grains (1 to 2 gm.); the hydroxide or magma magnesia (milk of magnesia) as antacid 1 dram (4 c.c.), as laxative 4 drams (15 c.c.), the carbonate, 2 drams (8 gm.). The citrate (liquor magnesia citrate effervescent) containing lemon, citric acid and sugar, is given in 7 ounce (200 c.c.) doses; and the sulfate (Epsom salt), very soluble in water, ¼ to ½ ounce 7½ to 15 gm.), preferably on an empty stomach. A tablespoonful or two of a 50 per cent saturated magnesium sulfate solution given on an empty stomach acts as a cathartic and diuretic. Tribasic magnesium phosphate as an antacid is given in 15 to 75 grain (1 to 5 gm.) doses. An enema of magnesium sulfate 2 ounces (60 gm.) dissolved in 4 ounces (120 c.c.) of water is an effective purgative.

Sodium phosphate:—Used as a cathartic, especially when the liver is torpid. The dose is 1 to 2 drams (4 to 8 gm.) dissolved in a glass of hot water, and taken before breakfast. It produces a single soft stool within an hour. Fleet's phosphate of soda may be substituted for the powder.

The dried phosphate (exsicatum) is twice the strength of the ordinary phosphate; the dose is 15 grains (1 gm.).

Sodium acid phosphate is very soluble in water; it is used to acidify the urine. It should not be used in conjunction with urotropin. The dose is 2 to 10 grains, repeated every four hours until the urine becomes acid.

Carlsbad salt, genuine or artificial, is an agreeable laxative of uniform composition, and may be given in one or two teaspoonful doses in 6 to 8 ounces of hot water fifteen to thirty minutes before breakfast. May also be obtained in effervescing form.

Rochelle salt is a combination of potassium and sodium tartrate. The dose is 2½ drams (10 gm.).

The dose of effervescing phosphate is 2½ drams (10 gm.); of the sulfate (Glauber's salt), ½ ounce (15 gm.); and the citrate, 15 grains (1 gm.).

Seidlitz powder (pulvis effervescent compound) is composed of tartaric acid (in a white paper) and Rochelle salt and bicarbonate of soda (in a blue paper). When ready to be taken, the contents of the white and blue papers are dissolved separately in water. Then the two solutions are mixed and the liquid is drunk as soon as violent effervescence ceases. It is an antacid and a laxative. It should not be given to patients with ulcer, abdominal cramps, or in the presence of suspected appendiceal inflammation.

Cream of tartar (acid potassium tartrate) is a laxative and a diuretic. The usual dose is 1 to 2 drams (4 to 8 gm.), dissolved in a quart of water, flavored to taste with lemon and sugar, and taken in divided doses during the day.

Sodium sulfate exicatum (dried sodium sulfate), like sodium phosphate, is a laxative. The dose is ½ to 1 dram (2 to 4 gm.).

Sodium chloride:—Although this does not necessarily belong to the laxative or cathartic group, it is employed as such with very good effect. A teaspoonful of salt in a pint of water taken before breakfast often is laxative. Its effect on pepsin, in a 2.5 per cent solution, is inhibitive. In the presence of free acid it does not destroy the pepsin, but once it is destroyed, the ferment cannot be re-activitated by acidulation.

Pyloric and high intestinal obstruction deprives the body of salt directly and by preventing absorption of food.

Mercurials

Mercurial preparations are employed for catharsis and diuresis. In prescribing mercury and its compounds the physician must be on the lookout for possible toxic symptoms, especially in patients with pyorrhea, nephritis or some form of dysentery.

Stomatitis is usually the earliest symptom of excessive dosage of mercury or of chronic poisoning which it causes. The symptoms are fetor, a metallic taste, soreness of the gums and ptyalism. After continued administration the teeth loosen, the edges of the gums blacken, swell and bleed, and later the tongue also becomes ulcerated and bleeds.

Stomatitis may be prevented by care of the teeth before mercury is administered. Peroxide of hydrogen or potassium chlorate (a teaspoonful of the saturated solution to a glass of water) may be used as a mouth wash several times daily.

Small doses of mercury raise the blood count, larger doses decrease it; in some individuals it also increases the weight.

Cathartic Action:—Calomel is the mildest of the mercurial preparations. It is known as hydrargyri chloridum mite, and mild mercurous chloride. It is insoluble in water. After its administration peristalsis begins in the duodenum and extends through the jejunum, thus hastening the passage of the contents of the small intestine. The action of calomel on the colon is not very powerful. When the dose is too small the movement may not be copious; when too large, griping, rectal irritation and tenesmus with numerous stools result. It is customary to follow the calomel with a saline cathartic to insure a thorough washing of the colon. One-half to one bottle of citrate of magnesia given about six to eight hours after the last dose of the mercurial is our choice.

The patient should be cautioned regarding the color of the stools, which may be gray or green. When gray, it is due to the calomel passing through the stomach into the duodenum where it is changed to mercurous oxide. The green color is undoubtedly caused by the presence of unchanged biliverdin, this being due either to the rapid carrying of the bile through the intestines or to prevention of the usual reduction of the bile pigment. Copious bile stools may be observed when calomel is repeated frequently in large amounts. This is not due to its choleretic or cholagogue action but may result from improved hepatic circulation because of prolonged over-activity of the small intestine—definite proof that it has no effect on the emptying of the gallbladder, although it does slightly affect the motility of the gallbladder wall.

Calomel may be administered either as a powder or as a tablet triturate. The tablet triturate may be given to children in 1/10 grain (0.006 gm.) doses every fifteen or thirty minutes until ½ to 1 grain is taken. Adults may be given ½ grain (0.03 gm.) every half hour for four doses, followed by a saline cathartic six to eight hours later.

The chief uses of calomel depend upon its cathartic and antiseptic action high up in the intestine. Whether or not it is combined with bicarbonate of soda makes little difference because, as previously observed, it is changed to mercurous oxide in the duodenum.

The compound cathartic pill is composed of 1 grain (0.06 gm.) calomel, compound extract of colocynth, resin of jalap, and gamboge. The dose is one pill at bedtime.

Care should be exercised in the administration of the following: A combination of mercury and chalk 4 grains (0.25 gm.), or blue mass 3 to 5 grains (0.2 to 0.3 gm.), are usually effective in torpid liver, bilious headache and plethoric conditions.

Antispasmodics:—Shall we employ antispasmodics in constipation is a question which often arises, and the answer as a rule is no. However, in patients who have griping or cramps as a disagreeable side action, trasentin, pavetrin, profenil and small doses of belladonna or its congeners may be given as an active antispasmodic. Bearing in mind the possibility of glaucoma, belladonna should be used with caution. Barbiturates may also be used cautiously.

Vitamins:—When the diet is adequate there is little need of Vitamins. B_1, Brewers yeast and combinations of vitamins are useful adjuvants when indicated.

We have found Vitamin B_1 of material aid especially in atonic constipation.

Enemata

The rectum and the colon absorb many soluble substances and the effects are often more prompt or more satisfactory than from oral administration. Enemata for the absorption of medicines should be as small as possible (1 to 4 ounces) but not strong enough to produce a local irritant effect. Before using the medicated enema the rectum should be cleansed with warm water.

Rectal feeding is often administered when digestion is poor, as in fevers, convalescence, in tiding over a temporary crisis, and in the feeding of infants. It is to be employed only for three or four days at a time. Water, dextrose and sodium chloride are readily absorbed from nutrient enemata. Dextrin and amino acids are also absorbable, but proteins are not. Proteins are absorbed after being broken down by bacterial putrefaction. Fat is absorbed only in small quantities; however, alcohol is readily absorbed.

A nutrient enema is given either as a single enema or a continuous drip. When the nutrient enema contains albumin, peptone or fat, two cleansing enemas should be given daily. If only carbohydrates and albumin are used, one cleansing enema suffices. The daily dosage should not exceed 2,000 c.c.

Rectal Feeding

One hour before the nutrient enema is given in the morning, the bowels should be cleansed by thorough but gentle lavage of the colon with normal saline solution or with a weak alkaline solution about 1 teaspoonful of bicarbonate of soda to each quart of water—M iii—vi tr. opii may be added to the first feeding in case the patient has pain. The following may also be added in one of the enemata in case of nervousness or restlessness: 15-30 grains of Triple Bromides. Some patients require more than one cleansing enema a day.

Liq. Peptones	2 ounces
Eggs	1 - 3
Sol. Glucose (20%)	3 ounces
Sod. Chloride	gr. 22
Pulv. Pepsin	gr. 7½
Tr. opii	gtt. 3
Bouillon	6 ounces
M. Sig. for enema	

or, Beef tea 3 ounces, yolk of one raw egg, brandy ½ ounce, liquid pancreatin 2 ounces.

or, Beef tea 2 ounces, brandy ½ ounce, cream ½ ounce.

or, White of 2 raw eggs, peptonized milk, 2 ounces, 2 eggs.

Take one or 2 eggs beat up carefully with a little cold water until no threads of albumin are left, to this add 250 c.c. of warm water and a pinch of salt for each egg used, or the water may be replaced by an equal amount of milk.

Cream enema:—Cream 1 pint, pancreatin 1 teaspoonful, peptone 2 tablespoonfuls, grape sugar 2 tablespoonfuls, salt ½ teapsoonful.

The next feeding may be:

Milk ½ pint, 2 yolks of egg, 1 tablespoonful red wine (when there is no hyperchlorhydria), 1 tablespoonful Nestle's or Mellon's food.

Or instead of this:

2-3 eggs, ½ teaspoonful salt, ½ pint of peptonized milk.

Or this:

2 eggs, ½ pint peptonized milk, ½ teaspoonful salt, ½ pt. 20 per cent grape sugar solution administered slowly.

6 A.M. Dextrose—1 ounce, strained juice of a half orange. Sod. Bicarbonate gr. 30. Normal saline to make 10 ounces.

8 A.M. Skimmed milk thoroughly peptonized and pancreatinized 5 ounces.

If the patient is very thirsty, allow to rinse mouth with cool water, and it is also essential to wash the teeth and mouth a few times daily.

On the 4th or 5th day we begin with 2 tablespoonfuls of cooled milk every hour, which amounts to about ½ liter daily. In addition to this the patient is given 2 rectal feedings, a cream feeding in the morning and ½ pint of milk and ½ pint of 2 per cent grape sugar by the drip method about 4 P.M.

Evacuant enemata have an advantage over cathartics taken by mouth; they should be nonirritant, and may therefore be used in conditions in which oral cathartics are contraindicated. To soften hardened scybala they should be given warm, in copious quantities, or as decoctions of mucilaginous substances. Olive oil, though less solvent, if administered carefully in amounts of 70 to 500 c.c., can be retained for

several hours. To secure the maximum motor effect, the injection must be used cold and in fairly large quantity; for adults, a pint, quart, or more; for children, according to age (at one year, an ounce, and approximately one-half ounce more for each year). Irritants may be added to enemata to secure immediate expulsion. Soap, if employed, a small quantity (however, we do not advise soap as it irritates the mucous membrane and may even cause bleeding); molasses, 1:8; salt, 1:6; turpentine, 1:20 (emulsified with egg yolk) especially useful for flatulence; bile 1:50; milk of asafetida may be used, because of its obnoxious odor it has been relegated into obscurity.

Enemata may also have other uses by direct action on the rectal mucous membrane (astringents); they may also be employed for the removal of parasites (bacteria, protozoa, worms), abnormal mucus and the products of inflammation.

To be more specific, here is a more detailed description of this important, but much abused, rectal therapy. A bland enema, the container held about two feet above the buttocks, reaches the cecum in two to five minutes. The average or normal colon holds about one and one-half pints; an atonic or redundant colon may hold two to four quarts. A large enema may force its way into the ileum and at times into the appendix. In patients whose nutrition is poor, an enema may pass high up into the small intestine and may even be vomited.

In using an enema for the cathartic effect, the quantity employed depends upon the requirements. In the presence of a tight sphincter 4 ounces (120 c.c.) of water may suffice to start a movement. In simple constipation 1 pint (500 c.c.) of water injected while the patient sits on the toilet may bring an immediate movement of the bowels. When a patient is confined to bed, 1 to 2 quarts of warm water with one teaspoonful of salt or bicarbonate of soda may be added to each pint. It is preferable to have the patient lie on his left, the container elevated not more than eighteen inches or two feet above the rectal area. Small quantities of the fluid are permitted to flow in at one time so that the patient does not experience cramps or overdistention of the colon.

As previously mentioned, soapsuds are active irritants of the bowel wall and should not be used routinely. Many nurses, mothers, and hospitals continue to use soapsud enemata. Examination of the mucous membrane through a proctoscope following one of these enemata will show a congested mucosa, ulcerations and, frequently, blood in the stool.

For softening or for disintegrating lumps, impacted or hard stools, water may be used with or without the addition of salt, bicarbonate of soda, glycerine, oxgall, peroxide of hydrogen, mineral oil, olive, corn, cottonseed oil or molasses. Glycerine increases the penetrating power of the water; and peroxide of hydrogen (one or two tablespoons in two glasses of warm water) is highly efficient as a cleanser and in impactions.

For expelling gas, in flatulence and tympanites, soapsuds alone or with turpentine ½ ounce (15 c.c.) to 1 quart, or hot normal saline with 2 drams (8 c.c.) of peppermint act favorably. (See caution regarding use of soapsuds.)

When local irritation is present one may use a demulcent enema consisting either of oil, starch water, or a solution of acacia or tragacanth.

In spasm of the rectosigmoid or descending colon, a 25 per cent solution of magnesium sulfate may be administered through a catheter or rectal tube.

Spasticity of the anal canal, not accompanied by local lesions, dilatation of the anus by means of a special dilator or dilatation under gas anesthesia are recommended. Fecal impaction is best treated by manual removal of the impaction.

Where a change of intestinal flora is necessary the colonic implantation of the lactic acid bacillus may help to restore normal bowel function. When this is not feasible we have found Neocultol, ʒi ʒii at bed time with or without ʒiv milk sugar in ½ glass of water once or twice daily.

In some patients the milk sugar causes increased gas formation and cramps.

Colonic Irrigation

Colonic irrigation like the enema is a much abused procedure, but at times a necessary evil. It may be employed for the following purposes: to cleanse the bowel above the area of defecation; to promote expulsion of flatus; to remove mucus in mucous colitis; to remove food or drug poisons; to introduce heat and cold into the colon; to supply liquid to the body in dehydration or after hemorrhage; to activate the kidneys; to medicate the colon, as with tannic acid, demulcents, etc .

Irrigation is accomplished by slow administration of water after the bowels have moved. It is preferable to precede the irrigation with a low enema. There are two methods of irrigation—the one tube and the two tube method.

When the single tube is used and the fluid is introduced through a soft rubber rectal tube until the bowel is distended, the water is allowed to run out through the same tube. This procedure should be repeated several times. The tube recommended is No. 30 to 34 French, velvet-eyed; it has no terminal opening. It should not be inserted more than six inches, and should be well lubricated, preferably with nupercainal, diathane cream, eucupin or a similar substance.

When the two tube method is used a No. 20 French soft rubber velvet-eyed catheter is inserted about six inches, and another soft velvet-eyed rectal tube No. 30 French, without end opening, is inserted about four inches. This permits a continuous flow without undue distention. The container is placed about 18 to 24 inches above the buttocks and the liquid is run in slowly. The patient lies first on the left side and later on his back. The amount of liquid at each irrigation should not exceed 4 to 6 gallons, and should not be repeated oftener than every two or three days, and later less frequently.

There are numerous contraindications to this procedure which the physician should take into consideration. Marked cardiovascular and arteriosclerotic patients should not be subjected to prolonged and excessive manipulation.

Rectal or Evacuant Suppositories

Suppositories are useful in evacuating the lower bowel or in introducing medicinal agents for their systemic or local effect. The simplest suppository consists either of a piece of soap in the form of a plug or cone, or of a suppository made of glycerine. The shaping of a piece of soap and introducing it into the rectum is an old-fashioned remedy, employed for children. It acts mechanically and starts the defecation reflex. Another simple method formerly employed is to roll a piece of paper, cut or tear off the point and introduce it into the rectum after it has been greased. The modern method consists in the use of suppositories of glycerine, adult or child size. They will produce a movement before melting entirely. In the anal canal, glycerine suppositories used too frequently, act as irritants, but not when inserted high into the rectum. When patients complain of irritation the physician should not insist upon its further use.

Glycerine may also be injected into the rectum 2 to 5 c.c., (½ to 1 teaspoonful). It withdraws fluid from the mucous membrane and thus causes irritation, peristalsis and evacuation of the bowels. The stool is of almost ordinary consistency and no pain or colic is felt, nor does the remedy cause more than one evacuation.

Various medicaments may be incorporated into suppositories. To hold them together cocoa butter (oleum theobromatis), glycerine or wheat gluten may be used. They readily disintegrate at body temperature. Among the drugs incorporated one may use one of the opium preparations (codeine, morphine, demerol, etc.); digitalis, aspirin, aminophyllin, ephedrine and barbiturates which are soluble. For a local effect, tannic acid, bismuth salts, balsam peru, benzocaine, etc., may be used.

Numerous ready-made suppositories containing drugs for their local effect upon hemorrhoids, fissures in the anal canal, etc., may be prescribed. It is advisable for the physician to incorporate his own tried medicinal agents.

In severe cases of coloproctitis or ulcerative colitis, suppositories containing cod liver oil incorporated in a gelatine base may be used.

Surgical treatment:—Although abdominal surgery is resorted to only in the presence of bands and adhesions caused by inflamed pericolic membranes, the physician should bear this in mind especially in chronic obstipation. These membranes commonly involve the ascending colon, but may also involve the transverse and descending colon. Lane's kinks and angulations are relieved by dividing constricting bands and adhesions.

Summary

Constipation, its causes, symptoms and treatment, are discussed, although a satisfactory definition of this condition appears to be difficult. That constipation is not a disease but rather a symptom and in a large measure depends upon a state of the mind is now an accepted fact. The patient needs education with respect to hygienic, dietetic, psychic and physical measures so that he will have more regular bowel action.

In the diet the physician must seek among the vegetables those that will enhance their laxative effect. The following are more laxative because of greater residue: cooked asparagus, string beans, carrots, spinach, sweet potatoes, tomatoes, beets, and peas. Artichoke, parsnips, onions, cabbage, cauliflower, eggplant, green peppers, turnips, kohlrabi, broccoli, navy beans, lima beans, squash, corn. Where flatulence and gas is present care must be taken to exclude the cabbage family.

Cooked fruits like prunes, peaches, baked apples, applesauce, figs, apricots, pears, rhubarb, fruit pies; raw plums, cherries, berries of all kinds, grapes, pineapple, are laxative because of their chemical irritant. Here again in the presence of diverticula it is advisable to omit fruit with pits and seeds.

Raw vegetables and raw fruits may be used unless contraindicated because of spasm, diverticula or irritable colon: lettuce, celery, watercress, endive, radishes, banana (least laxative), oranges and grapefruits (juice, sections, whole), apples, melons, pineapples, grapes, avocado pears and peaches.

Honey, ice cream with fruit and nuts, jam, jelly, marmalade, candy, pickles, coca cola, ginger ale and beer may also be permitted in some cases.

Various types of laxative agents like cascara, senna, phenolphthalein, mineral oil, salines, bulk producing gums and mercurials, their indications and contraindications and mode of action complete this essay.

EDITORIALS

Specialist Training

The World Medical Association Bulletin of January, 1950, reports on postgraduate medical education and specialty training throughout the world. A Council Committee was created for the specific study of postgraduate medical education and specialist training. The members of this Committee are Dr. J. A. Pridham (U.K.) Chairman, Dr. J. A. Bustamente (Cuba), Dr. A. Hartwich (Austria), Professor Dr. E. Marquis (France), Dr. S. C. Sen (India). In response to a questionnaire prepared by the World Medical Association and sent to the various national medical associations comprising its membership, answers were obtained relative to the existence or establishment of standards for specialists, period and type of training, prerequisites, examinations, certificates, school faculties, recognized specialties, and opportunities for advanced education for physicians not interested in becoming specialists.

Thirty-two national medical associations returned answers to these questionnaires. These were:

Australia, Austria, Belgium, Canada, China, Cuba, Denmark, Dominican Republic, Eire, Ecquador, Finland, France, Great Britain, Greece, Guatemala, Iceland, India, Italy, Israel, Luxembourg, Netherlands, New Zealand, Norway, Pakistan, Peru, Philippines, Portugal, South Africa, Spain, Sweden, Switzerland, and the United States.

Postgraduate medical education is, of course, defined as the education of doctors after they have qualified to practice medicine. Such education is one of the best ways of raising the standards of the medical profession.

We are particularly interested in this report inasmuch as it defined the terms "consultant" and "specialist". These terms are defined as follows:

"A consultant is a medical practitioner whom his colleagues recognize as one worthy to be called in for advice and opinion by virtue of his special knowledge and experience. He will be eminent in the area where he practices and may or may not hold special university degrees or other qualifications, and will almost always be on the staff of a hospital. He may also, in some countries, be a specialist in a particular field of medicine and also possibly a general practitioner. This last possibility is impractical in some countries.

"A specialist is a medical practitioner who practices in one or more particular fields of medicine and is often a master of some special technic. He may not be so eminent as a consultant and his interests may be much more limited than those of a consultant. He is almost certain to be on the staff of a hospital, and in some countries he too may be a general practitioner".

These definitions are of particular interest inasmuch as they are primarily based upon local recognition of the talents of the practitioner. If the practitioner's colleagues in the area of his practice recognize his special ability he may be classified as a consul-

tant or a specialist. No mention is made of certification by corporate Boards (as the American Boards) or other organizations. *The emphasis is primarily on eminence in the area where he practices.*

We must, of necessity, be in accord with this definition. The ability to pass a particular examination does not automatically endow the aspirant with clinical experience, good judgment, or worthiness in the eyes of his colleagues. Specialty Boards are important to raise the standards of training. However, they are not, and should not be of prime importance in qualifying existing practitioners.

Fundamental recognition of a consultant's or specialist's ability must come from his colleagues in the area in which he practices. As defined, he may or may not hold special university degrees or other qualifications. Thus, in the United States at least, a County Medical Society is in a better position to qualify the practicing specialist than is a Specialty Board.

The Third General Assembly, meeting in London in Ocotber, 1949, adopted the following recommendations:

"1. After the course of training ordinarily prescribed in a medical school course, there should be an additional period of training in an approved post, before engaging in independent practice.

"2. To become a specialist it is necessary to obtain adequate postgraduate training, both theoretical and practical, particularly in the field of the specialty.

"3. The appropriate professional bodies, which may or may not be the National Medical Associations, should decide the length of these periods and endeavor to secure observation of these conditions.

"4. The W.M.A. desires that all national medical associations inform it of their decisions or opinions on these conditions.

"5. The W.M.A. requests national medical associations to develop arrangements whereby postgraduate studies and practical experience will become available to members of the profession in other countries. The national medical associations and various international organizations should arrange an exchange of information regarding vacancies and opportunities for graduate and postgraduate study in foreign countries. To accomplish this it may be necessary for the respective countries to overcome certain legal and other difficulties."

In fifteen countries, Canada, China, Denmark, Finland, France, Greece, Iceland, Italy, Luxembourg, Netherlands, Norway, Portugal, South Africa, Sweden and Switzerland there are specific standards which a physician must meet before announcing himself as a specialist. Ten associations, Cuba, Eire, India, Israel, New Zealand, Pakistan, Philippines, Peru, Spain and the United States, report there are no specific standards, although the United States reports a growing trend among both physicians and the public to accept as specialists only those physicians certified by one of the sixteen

American Boards in the medical specialties, and the Philippines Association is planning to establish specific standards. The Australian Association reports no specific standards in five States and specific standards in one, Queensland. The Belgian Association states that while officially there are no standards for specialists, unofficially there are such standards. In Great Britain no specific standards, as such exist, but a physician's status as a specialist or consultant is dependent not only upon his qualifications, but also upon the recognition of his ability by his colleagues.

It is interesting to note the stress throughout upon recognition of the specialist's ability by his colleagues. As I have indicated, my opinion is that this recognition is best determined and established by the local County Medical Societies in the United States.

It is interesting also to note that the length of training required for specialists varies widely in different countries. For Cuba and Eire the length of training is less than a year,—in Cuba two months; in Eire two to nine months. Two or three years is the average minimum for specialist training, and five to six years is the average maximum.

The application of these studies to the question of specialization in proctology is very evident.

First, there is need for an International Board of Proctology to establish standards for this specialty throughout the world. Indeed, there is need for such International Boards in all fields.

Second, the definitions established by the World Medical Association must be followed in the conduct of this Board, so that varying conditions throughout the world will be met.

Third, the major criterion for the recognition of a specialist, and his certification, should be his acceptance or his rejection by his colleagues in the area in which he practices. This can be established best through the local County Medical Societies in the United States, and by equivalent units in other countries.

Fourth, examinations must be secondary in certification, particularly for men who already are established in their specialty, and whose experience and eminence are recognized by their colleagues.

Fifth, specialty certification should be a combined effort of the local Medical Society and the International Board, under the jurisdiction of the national medical association, the local government, or the World Medical Association, or all of these agencies acting in concert.

It thus becomes a further purpose of the International Academy of Proctology to advocate the establishment of such International Boards, particularly for the certification of specialists in proctology.

ALFRED J. CANTOR

The World Medical Association

The World Medical Association was organized in Paris in September 1947. Its unit of membership is the national medical association which is most representative of the country.

At the present time 39 nations are represented in the Association. Its aims, briefly, are to effect a better liaison among doctors and the national medical associations of the world; to exchange information; to represent world medical opinion before various international bodies; to improve standards of medical education, medical care and public health throughout the world and to improve international relations. It has liaison with various international organizations, both governmental and non-governmental.

Although organized less than three years, the Association already has several constructive accomplishments to its credit.

Among these are:

Investigation and report on, Undergraduate Medical Education in 26 countries; Social Security as it Affects Medical Practice in 24 countries; Cult Practice in 24 countries; Medical Advertising in 23 countries; Postgraduate Medical Education and Training of the General Practitioner in 32 countries; Medical Manpower and the Status of the Medical Profession in 23 countries; Adoption of a modified Hippocratic Oath; Adoption of a Code of International Medical Ethics; and publication of a quarterly Bulletin. All publications are in three languages—English, French and Spanish.

Continuing studies are in progress on the aforementioned activities, and in addition, investigations are under way on hospital facilities and certain pharmaceutical problems in the various countries.

Because of the financial condition of most of the world, a supporting committee has been organized and is known as the World Medical Association, United States Committee, Inc. It is a nonprofit corporation and membership is open to organizations, both lay and professional and to individuals.

Headquarters of the Association and of the Committee are located in New York. The United States Committee has guaranteed the expenses of the Secretariat, the expenses of the Council and the publication of the Bulletin.

The World Medical Association is to be distinguished from the World Health Organization. The latter is a branch of the United Nations and represents the governments of the world in medicine, more particularly in the field of public health. It receives its financial support from government funds. The World Medical Association represents the medical associations and doctors of the world, particularly in the fields of medical education and medical care. Its financial support comes only from private sources.

The doctors of the world are looking to us for help. Furthermore, what affects the rest of the world is bound sooner or later to affect us here. Support of this organization will aid in raising the levels of health in all its aspects throughout the world and protect the future of medicine.

Louis H. Bauer

NEWS NOTES

Second Annual Convention

The second annual convention of the International Academy of Proctology was held at the Bellevue Hotel in San Francisco, Calif., June 23 and 24, 1950. Proctologists from all parts of the country and from several foreign countries attended the two day scientific sessions.

Those who attended all expressed a feeling of having learned something, and a desire to return for more of these practical lectures and courses.

Plans now are being made to hold the third annual convention in Atlantic City in June, 1951, at the time of the American Medical Association meeting. Further details will appear as they are available.

The papers read at the convention will appear in The American Journal of Proctology, commencing with this issue.

Officers Elected

At the second annual meeting of the International Academy of Proctology in San Francisco, June 23, 1950, these officers were elected for the year 1950:

Dr. Caesar Portes, Chicago, Ill., president; Dr. H. A. Springer, Cincinnati, Ohio, president-elect; Dr. Edgar M. Scott, Jr., Birmingham, Ala., first vice-president; Dr. Donald C. Collins, Hollywood, Calif., third vice-president; Dr. Alfred J. Cantor, Flushing, N. Y., secretary; Dr. William Lieberman, Brooklyn, N. Y., treasurer.

Dr. Francis S. Adams, Pueblo, Colo.; Dr. Carroll J. Bellis, Long Beach, Calif.; Dr. Harry A. Gussin, Chicago, Ill.; Dr. Raymond S. Johnston, Kearny, Neb.; Dr. Edward Krol, Chicago, Ill.; Dr. Paul Lahvis, Gowanda, N. Y.; Dr. William W. Meissner, Buffalo, N. Y., and Dr. Evan C. Reese, Stroudsburg, Pa., are the members of the executive board.

International Academy of Proctology Affiliates with World Medical Association

At the annual meeting in San Francisco, it was voted that the International Academy of Proctology affiliate with he United States Committee of the World Medical Association.

The aims and purposes of the World Medical Association are contained in an editorial by Dr. Louis H. Bauer, Secretary-Treasurer of the United States Committee, which appears elsewhere in this issue.

The board voted to contribute a fixed sum to the World Medical Association. A letter of acknowledgment follows:

THE WORLD MEDICAL ASSOCIATION
UNITED STATES COMMITTEE, INC.
2 EAST 103RD STREET, NEW YORK 29, NEW YORK, U.S.A.

July 25, 1950

Alfred J. Cantor, M. D.
International Academy of Proctology
43-55 Kissena Boulevard,
Flushing, New York
Dear Dr. Cantor:

Thank you for your letter of July 20 enclosing check from the International Academy of Proctology.

Will you please express to your Board of Trustees the thanks of the United States Committee for their interest and generosity.

Sincerely yours,

Louis H. Bauer, M.D.

Secretary-Treasurer

LHB-fr

In Memoriam

We learn with deep regret of the passing of Dr. Otto G. Marsh, Fellow, of San Diego, Calif.

Our profound sympathies to the bereaved family.

ABSTRACTS FOR PROCTOLOGISTS

VOLVULUS OF COLON. Walter H. Gerwig, Jr. Arch. Surg., 60:721-742, 1950.

The condition is more frequently reported in European literature than it is in this country. In Europe 17 per cent involve the cecum, while in the United States only 5 per cent do. Volvulus seems to be about 10 times as frequent in Europe as compared to the United States. The following classification is proposed: a. Anatomic location; b. Extent of Pathology.

The pathology is graded from 1 to 4, depending upon extent. This may be by rotation of less than 180 degrees and asymptomatic to a volvulus of more than 180 degrees with symptoms, irreversible with complete obstruction and irreparable circulatory damage.

It is believed that fetal arrests are a significant factor in leading to a predisposition to volvulus of cecum.

C. H. BENAGE

SURGICAL CONSIDERATION IN THE MANAGEMENT OF CANCER OF THE COLON. Claude J. Hunt. Am. J. Surg. 79:222-228 (Feb.), 1950.

Usually palliative colostomy is a procedure to be condemned, except in patients with advanced malignancy associated with impending obstruction. Palliative resection may add much to the patient's comfort and length of life. Secondary cancer or polyps may be present elsewhere in the colonic tract accompanying a cancer of the colon. Lesions on the right side of the colon produce ulceration, infection, and a marked anemia, while those of the left colon cause bleeding or progressive obstruction. Surgical approach is facilitated by a clean, unobstructed bowel and danger of peritonitis is reduced by a week of administration of sulfasuxidine or sulfathaladine. In the absence of obstruction, inflammation or fixation, primary resection and anastomosis can be done in any segment of the colon with a very low mortality. Open operation adds little risk of peritonitis but affords accuracy of suture, minimum inversion of the bowel, controls hemostasis and affords inspection for adjacent polyps that are frequently observed. Peritonitis is the result of continued contamination by leakage or tissue necrosis. Obstruction must be abolished before resection of the lesion is attempted. This is best done by cecostomy or right transverse colon colostomy. Cecostomy is done for all obstructions proximal to the sigmoid and transverse colon colostomy for those of the sigmoid and rectosigmoid.

DONALD C. COLLINS

FISSURE IN ANO. R. V. Gorsch, and U. R. Finnerty, Rev. Gastroenterol., 17:39, (Jan.), 1950.

Anatomically the abrupt axial change of the anal canal to the rectum forms the so-called anorectal shelf and, in the act of defecation or active dilation, this posterior shelf flattens out and is subject to much greater tension than the anterior commissure where the anal and rectal linings continue in the same plane. This axial change predisposes the posterior anoderm to rupture.

Pathologically the posterior commissure is exposed to fissure because fibrosis (pectenosis) with fixation of the anoderm is very commonly present. The mobility of the posterior shelf is greatly diminished. The rupture occurs posteriorly in the fissure not because this is the weakest point of the anal ring, but because in dilation of the anus either mechanically or physiologically, the posterior anoderm is a fixed point.

The authors are convinced that not only should the fissure, together with the sentinel pile and sinus tract be removed with any other adjacent pathology such as hemorrhoids and infected crypts, but that the entire subcutaneous portion of the external sphincter muscle together with the fibrous tissues should be completely incised or excised. In other words that the treatment of posterior anal fissure should consist of a fissurectomy, pectenotomy, and a posterior sphincterotomy.

SYDNEY E. WEINTRAUB

A NEW PROSTHESIS FOR PROLAPSE OF THE RECTUM. Edward E. Jemerin. Am. J. Surg. 79:350-352 (Feb.), 1950.

A case is reported of a seventy-two year old woman in extremely precarious general health who had a severe rectal prolapse, measuring six inches in length. The prolapse was held in place very satisfactorily by using, on alternating days, a plastic and a rubber reversed Gellhorn pessary inserted into the anal canal, the base remaining outside between the ischial tuberosities. Slots were made in the base through which an elastic belt was threaded and whose ends were attached to an ordinary garter belt.

Complete relief was obtained with this prostheses and it has been worn successfully for the past thirty months with marked improvement.

DONALD C. COLLINS

UNUSUAL ANAL, RECTAL AND PERIRECTAL TUMORS PALPABLE BY RECTAL EXAMINATION. A. Oppenheim and J. P. O'Brien. Am. J. Surg. 79:302-311 (Feb.), 1950.

Illustrative case reports are made upon a group of unusual and misdiagnosed tumors of the anus, rectum and perirectal tissues.

Anorectal malignant melanoma usually occur in adults. Their proper treatment should be abdominoperineal excision with subsequent bilateral groin dissection.

Hemangioma of the rectum are congenital in origin. Their most prominent symptom is repeated rectal bleeding, often beginning in infancy. Two such cases were successfully treated by either radium seeds or irradiation x-ray therapy.

Repeated spontaneous rectal hemorrhages in the absence of other positive findings is a diagnostic feature of malignant leiomyoma of the rectum. Abdominoperineal resection is recommended in nonpedunculated tumors. The cure rate is low.

Lymphosarcoma of the rectum usually occurs in males before the age of forty years. Two patients were treated by external radiation therapy and are both apparently in good health two years later.

Synchronous carcinoma of the anus and rectum in a fifty-four year old white female is reported who had in addition a squamous cell carcinoma of the cervix. She received 3,600 mg. hr. of radium to the cervix and 3,030 r for the anorectal carcinoma. She was well four years later with no evidence of recurrence from the three carcinomas.

Retrorectal or sacrococcygeal teratoma if untreated, may cause symptoms of compression of pelvic structures due to sudden growth activity in adult life. Early and complete excision is indicated as a prophylaxis against malignant change.

Sacrococcygeal chordoma arises from cellular remains of the notochord and is epithelial tissue. These lesions are soft, grow slowly, possess a very low rate of cure and tend to recur locally and metastasize late in the disease. A retrorectal tumor displacing the rectum anteriorly with positive roentgenographic evidence of sacral destruction in a patient with a previous history of trauma should make one suspect a chordoma. Radical excision using the cautery is the treatment of choice. DONALD C. COLLINS

PSYCHOSOMATIC ASPECTS OF PRURITUS ANI, Alfred J. Cantor, Rev. Gastroenterol. 16:778-783, (Oct.), 1949.

Pruritus is not a disease but rather a symptom, and in general, the etiology may be classified as follows:

A. Crytogenic

B. Secondary: 1—Chemical; 2—Mechanical; 3—Bacterial; 4—Psychogenic; 5—Allergic; 6—Physical; 7—Metabolic.

Therapy is most effective with tattoo-neurotomy.

Mercuric sulfide is tattooed into perianal skin and a blunt subcutaneous neurotomy performed. If needed, a psychiatrist should be consulted. C. H. BENAGE

CANCER OF THE COLON AND RECTUM: FACTORS INFLUENCING GREATER CURABILITY. Harry E. Bacon and Lloyd F. Sherman. J.M.A. Alabama pp. 310-318 (Apr.), 1950.

The incidence of cancer of the colon and rectum now exceeds cancer of the stomach as the most frequent cause of death from cancer. Vital statistics indicate that approximately 30 to 40 per cent of these patients are now being salvaged. Another 25 to 35 per cent could be cured if their lesions were resected earlier; that is, before the regional lymph nodes become involved.

The incidence and histology are reviewed. Multiple malignancies are more common in the colon and rectum than in the remainder of the gastrointestinal tract. Multiple malignancies were ascertained in 6.1 per cent of our cases. Adenomas were recorded in conjunction with primary carcinomas in 31.2 per cent of 171 operative cases. Twenty per cent were found to be malignant.

Early and leading signs and symptoms are reviewed.

The mode of spread of cancer of the colon and rectum is reviewed.

Of 983 patients with malignant lesions of the anus, rectum and colon, 761 were treated by some form of radical resection. The mortality rate to date has been 5.1 per cent. The five-year survival has been 58.4 per cent. The incidence of local recurrence with the "pull-through" (abdominoperineal proctosigmoidectomy) procedure is 17.9 per cent. EDGAR SCOTT

TOTAL COLECTOMY FOR BENIGN CONDITIONS—WITH A CONSIDERATION OF ANAL ILEOSTOMY WITH SPHINCTER PRESERVATION. M. M. Ravitch, Virginia M. Monthly 77:55-58, (Feb.), 1950.

The two conditions (benign) for which total colectomy is most commonly indicated are familial polypoid adenomatosis of the colon and certain cases of chronic nonspecific ulcerative colitis: namely, cases in which a polypoid degeneration of the colon develops and those cases in which the symptoms of colitis persist with little or no improvement after ileostomy.

At operation the patient is in the combined lithotomy-Trendelenburg position so that two teams, working simultaneously, can carry on the abdominal and perineal phases of the procedure. The colon is resected down to the levator ani and the ileum is then liberated to permit it

to reach the anus. Now a circular incision is made (perineally) at the mucocutaneous junction, and the mucosa and submucosa dissected back to a point above the level of the levator ani. This is then pulled down through the cylinder of a proctoscope so that the mucosa and submucosa are inside it and the muscularis outside it. An assistant from above makes a circular incision on the end of the proctoscope through the muscular layers. The specimen of colon and submucosa and mucosa of the rectum is removed, leaving intact the anal sphincters and the muscular coats of the rectum up to or above the levator ani muscles. The ileum is now passed down through this muscle tube and sutured in place by three rows of sutures.

Satisfactory sphincter control returns in from several weeks to over six months. Of eleven cases three were failures and eight are now in varying stages of successful rehabilitation.

HAROLD NEIFELD

PREMALIGNANT LESIONS OF THE ANUS, RECTUM AND SIGMOID. Frederick B. Campbell, Kansas City M. J., 26:13-15, (Apr.), 1950.

There are some lesions which appear to bear some relationship to malignancy. The frequency with which carcinoma is found associated with fistula of many years' duration suggests that either the chronic inflammatory reaction or the chemical irritation from the discharge is an inciting factor for the development of carcinoma in a susceptible individual. In reviewing 200 cases of carcinoma eight carcinomas were found in or near a fistulous opening.

Anal papillae are so common that they are rarely thought of as a source of malignancy. However, one which has undergone some structural change as evidenced by rapid enlargement should be removed. Five per cent of all neoplasms of the anus, rectum and colon arise near the anorectal line.

A relationship between polyps and carcinoma of the rectum and colon appears to be very definite. A majority of these tumors show hyperplasia of the mucosa when sectioned and therefore classified as adenoma. Pathological section is necessary for a definite diagnosis which determines the procedure to follow.

Condylomata might occasionally be mistaken for malignancy but they are entirely benign. Hemorrhoids are never premalignant lesions.

It is the opinion of the writer that the isolated or discrete polyp may be hereditary just as diffuse polyposis is hereditary. Therefore it is wise to advise children of parents who have or who have had carcinoma to present themselves for regular sigmoidoscopic examinations, for evidence continues to accumulate that there is a progression from simple polyp to adenoma, then to carcinoma.

C. H. BENAGE

PILONIDAL CYST: TREATMENT BY A UNIFORMLY SUCCESSFUL METHOD. C. J. Bellis. J. Internat. Coll. Surg. 13:334-337, (March), 1950.

Under spinal or intravenous anesthesia and without preliminary staining, an incision is made from the external opening of each sinus to the central cyst. Without the removal of any skin, the opened cyst and its communicating tracts are excised. Hemostats are applied to vigorous bleeding points, and the entire bed firmly packed for hemostasis with gauze moistened in warm sodium chloride solution for five minutes. Then interrupted fine silk or cotton sutures at 1 cm. intervals are placed through the skin edges of each side to the sacrococcygeal fascia in the midline of the cyst bed. The adjacent skin edges are approximated. Dry gauze dressings are lightly packed in the clefts and protected by a thick gauze dressing. Patients walk, sit, and perform their normal activities on the day of the operation. The wound is dressed on the fourth or fifth day or longer. Complete healing occurred within two weeks without any recurrence in 315 cases, even though many were reviewed as long as six years postoperatively.

HAROLD NEIFELD

A SIMPLE AND EFFECTIVE METHOD FOR HOLDING A RECTAL TUBE IN PLACE FOLLOWING SURGERY. Eugene A. Gaston, Surgery 27:699, (May), 1950.

A fine Kirschmer wire transfixes the rectal tube slightly distal to the point where it emerges from the anus. A fine wire does not obstruct the lumen and is sufficiently flexible to adapt itself to changes of position. The point of the wire is cut off, leaving 3-4 inches on either side of the rectal tube. Narrow rubber tubing (10 or 12 French rubber catheter) is used to cover the exposed wire, extending about one inch beyond the ends to protect the skin. A strip of adhesive tape 3-4 inches wide fastens each end of the rubber covered wire to the buttocks.

VIRGIL O. FISH

ANAL FISTULECTOMY. Carruth J. Wagner, Arch. Surg. 60:1006-1010.

The results in 122 cases over the past two years by a technic that was in vogue at the time of Hippocrates seems adequate and apropos today.

No dye is injected into the tract, a probe passed and tissue is excised per electric cautery. If multiple tracts exist, each and all must be treated as above without fear or regard for incon-

tinence. A gauze wick with nupercaine is placed in the tract for twenty-four hours. Normal habits and diet are resumed rapidly. Bi-weekly dilations are maintained until the wound is completely healed. C. H. BENAGE

BLIND INTESTINAL POUCHES RESULTING FROM LATERAL ANASTOMOSES. Carl J. Heifetz and H. R. Senturia. Surgery 27:673, (May), 1950.

After a brief review of the literature the authors present eight cases of blind intestinal pouches following side-to-side anastomoses of bowel. The pouch is formed in the blind end of the afferent or proximal segment of bowel. Five of the cases produced symptoms sufficient to indicate surgery and three were asymptomatic. The five requiring surgery had serious complications such as obstruction and perforation.

These pouches are more common than realized because of absence or vagueness of symptoms. Patients who have had a lateral anastomosis and have symptoms such as colicky abdominal pain, distention, borborygmus, nausea and vomiting, diarrhea, nutritional disturbances and anemia should be studied by x-ray for intestinal pouches.

Intestinal pouches causing symptoms should be removed either alone or as a resection of the entire anastomotic area with end-to-end anastomosis.

It is probably advisable to reconsider the subject of lateral versus end-to-end anastomosis. End-to-end anastomosis avoids possibility of intestinal pouches. VIRGIL O. FISH

PERIANAL INFECTION IN THE TUBERCULOUS PATIENT. J. Gerendasy. Am. J. Surg. 79:701-716, (May), 1950.

This is a summary of the proctologic findings in 204 patients. There is a definite field for anorectal surgery in the tuberculous patient. Complete and satisfactory eradication of local disease processes including tuberculous infection is possible by means of proper surgical technic. Illustrative case reports are presented under three main headings: benign lesions, treatment of perianal tuberculous infection, the results of surgical treatment in rectal lesions in the tuberculous patient. It is the author's contention that, in the successful management of this class of patients, the science of surgery cannot be disestablished from the art of surgery. DONALD C. COLLINS

SURGICAL MANAGEMENT OF LESIONS OF THE DISTAL BOWEL. H. E. Bacon and I. Sauer. J. Internat. Coll. Surg. 13:592-596, (May), 1950.

Carcinoma is the most frequent lesion. The rate of resectability, based on the number admitted to the operating room, is 87.7 per cent. The "pull through" operation was performed in 469, of whom 58.4 per cent are living and well after five years. There were 17.9 per cent of local recurrences.

Multiple polyposis is rare; and of a total of 18 cases, 15 had total or partial resection without a fatality.

Adenomatous polyps (solitary adenoma) should be destroyed early. If the lesion is benign (microscopically) and below the peritoneal reflection, it is destroyed by fulguration or the electric snare. A malignant lesion requires radical surgical removal. If the polyp is above the peritoneal reflection, it is removed by an abdominal approach. A polyp whose stalk is 2.5 cm. or more and benign on frozen section is removed and the bowel wall closed with drainage. If the stalk is less than 2.5 cm. and with a broad base, resection with immediate end-to-end anastomosis is performed.

Chronic ulcerative colitis can be cured now only by complete colectomy.

Inflammatory rectal strictures (lymphogranuloma venereum) with multiple abscesses and fistulae requires sacrifice of the anal sphincters by colostomy and later posterior excision. Otherwise proctosigmoidectomy without permanent colostomy and with preservation of the sphincters, preceded by transversotomy to reduce morbidity, is instituted.

Diverticulitis usually responds to medical treatment, but is complications require surgical intervention.

Endometrioma of the rectosigmoid was successfully treated in 3 cases by proctosigmoidectomy with preservation of the sphincters, and in one by resection with end-to-end anastomosis.

HAROLD NEIFELD

INTESTINAL OBSTRUCTION DURING LATE PREGNANCY CAUSED BY VOLVULUS OF SIGMOID COLON. D. W. James. Brit. M. J. 2:24, (July 1), 1950.

A 26 year old primipara was admitted to the Maternity Unit in her 36th week of pregnancy. Two days previously there was the onset of mild generalized abdominal pains. During the preceding day the pains had become severe and occurred at five minute intervals. She had vomited three times during that day. At emergency abdominal exploration, a large volvulus of the sigmoid colon was encountered. The blood supply to the sigmoid was still intact, so the volvulus was reduced by untwisting and its distention reduced by the passage of a rectal tube.

The patient had an uneventful convalescence. Labor was uneventful three weeks postoperatively. On the third and fourth weeks postoperatively, x-ray barium enemas of the colon revealed the presence of a large dilated loop of sigmoid colon which will require additional surgical treatment at a later date in order to prevent the recurrence of the volvulus.

DONALD C. COLLINS

A SIMPLER AND SAFER PROCTOSIGMOIDECTOMY. W. W. Babcock. J. Internat. Coll. Surg. 13:515-519, (May), 1950.

Cancer of the bowel, 6 cm. or more above the perineum, has little tendency to spread downward.

The abdomen is opened through a midline incision or a left oblique incision. The left peritoneal leaflet of the rectum and sigmoid is divided wide of the bowel. The hand is slid under the rectum and sigmoid and widely separates them from the lower vertebrae and the sacrum. The elevated right peritoneal leaflet is divided. The superior hemorrhoidal vessels and lymphatics divided below the first sigmoid artery well above any lymphatic enlarged nodes. Below and parallel with the first sigmoid artery, the mesentery is divided from its peritoneal margin to the bowel. The lateral peritoneal incisions are extended downward. Anteriorly, the bowel is separated from the bladder and seminal vesciles or the vagina. The rectum is elevated and divided at least 4 cm. below the cancer, and the clamped upper segment is withdrawn and wrapped in a towel. A drain of gauze, 1 m. long and 20 cm. wide, is introduced into the lower segment of rectum and out through the anus. Its upper end is folded over the open end of the rectum and the denuded surfaces of the pelvic floor so that the underlying layers would be withdrawn from the anus first. The abdominal incision is then closed about the protruding sigmoid, which forms the colostomy. The gauze drain is partly withdrawn on the fourth or fifth postoperative day, if it comes away without resistance, and additional loose segments of gauze are removed daily until all have been removed, usually about the seventh day. In uncomplicated cases the patient leaves the hospital in eight to ten days.

HAROLD NEIFELD

PAPILLOMAS OF THE COLON AND RECTUM. Francis J. Burns., Am. J. Surg. 80:97-101, (July), 1950.

The great majority of papillomas occur in the rectum and pelvic colon. The production of large amounts of mucus resulting in frequent, thin and watery passages, tenesmus and bleeding are the most prominent signs and symptoms. The correct diagnosis is commonly made by the endoscope. Multiple biopsies result in an accurate microscopic diagnosis. X-rays must be employed for diagnosis when the lesion lies above the reach of the sigmoidoscope. These lesions are almost always sessile and limited to the mucous membrane. They may occur singly, or may be multiple and may cover an extensive area of the mucous membrane. About 40 per cent of these tumors exhibit a low grade of malignancy, seldom metastasize, but tend to recur unless completely excised. Papillomas should always be treated as either premalignant or proven malignant lesions. Total excision, including normal surrounding tissue about the tumor base constitutes the treatment of choice. Segmental resection is probably best for tumors located in the pelvic colon or higher. If such a tumor cannot be successfully excised locally via the anal canal, a posterior proctotomy may be performed.

The case reports upon nine patients with papilloma of either the rectum or pelvic colon treated at St. Mary's Hospital Group, Saint Louis, Missouri, since 1941 are presented. Eight patients are symptom-free, and alive and well to date. If the microscopic examination of the tumor reveals no invasiveness, even though "cytological malignancy" may be present, some form of local treatment is usually all that is needed. This applies especially to lesions located in the rectum or lower sigmoid colon, which can be watched periodically for evidence of recurrence.

DONALD C. COLLINS